No. 179

Supreme Court of the United States

OCTOBER TERM, 1909.

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In Equity.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PETITIONER,

vs.

WAGNER ELECTRIC MANUFACTURING COMPANY, RESPONDENT.

Petition for Writ of Certiorari

FROM THE
SUPREME COURT OF THE UNITED STATES
TO THE
UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE EIGHTH CIRCUIT.

THOMAS B. KERR,
PAUL BAKEWELL,
Solicitors and of Counsel for Petitioner, Westinghouse Electric & Manufacturing Company.

Supreme Court of the United States

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PETITION FOR WRIT OF CERTIORARI FROM THE SUPREME COURT OF THE UNITED STATES TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE EIGHTH CIRCUIT.

To the Honorable the Chief Justice and Associate Justices of the Supreme Court of the United States:

Your petitioner, Westinghouse Electric & Manufacturing Company, a Pennsylvania corporation, respectfully represents:

That the following rules of law governing the *profits* which a complainant in a suit in equity for infringement of letters

patent is entitled to recover from a defendant, under section 4921 of the Revised Statutes of the United States, where the defendant has *made* and *sold* a patented invention in violation of complainant's rights, have been established by the decisions of this Court:

(1) Where the patented invention is for "a complete thing, consisting of a certain combination of elements," resulting in a new or improved machine or manufacture, and the defendant, in violation of complainant's rights under the patent, has made and sold machines or manufactures which embody in their construction such invention, "the whole of it," thereby having been guilty of *making* and *selling* the patented machine or manufacture; in such a case the complainant is entitled to recover all the *profits* made by the defendant in the manufacture and sale of such infringing machines or manufactures. Elizabeth v. Pavement Co., 97 U. S. 126, 141; Hurlbut v. Schillinger, 130 U. S. 456, 472; Crosby Valve Company v. Safety Valve Co., 141 U. S. 441, 453, 454.

(2) In such a case, if it appear that the defendant, in the manufacture of such infringing machines or manufactures, has also embodied in them some addition or improvement, the burden of proof is on the defendant to show what proportion of the profits made on said infringing machines or manufactures was due to such addition or improvement; and if the defendant fail to produce data from which the Master may ascertain what proportion of the profits made by the defendant were due to such addition or improvement on the patented invention, then the complainant is entitled to recover all the profits made by the defendant in the manufacture and sale of the infringing machines or manufactures. Elizabeth v. Pavement Company, 97 U. S. 126, 141; Crosby

Valve Company v. Safety Valve Co., 141 U. S. 441, 444; Rubber Co. v. Goodyear, 9 Wall., 802, 803, 804.

The above rules, established by this Court in the cases above cited and in other cases referred to in this petition, are especially applicable, where, from the record, it affirmatively appears—as it does in the case at bar by matters found and decreed antecedently to the particular case at bar, in respect to which matters this Respondent is legally and admittedly bound—that:

The invention of the patent was a distinct advance in the art, recognized as such by the public when the patented invention was first introduced, and where the infringing machines were sold as units or complete things, each consisting of the certain combination of elements claimed by the patent, each of the infringing machines constituting in itself a separate unit or entirety, embodying, *as an entirety*, the complete machine or manufacture claimed *as an entirety* in the patent in suit.

The above rules of law, established by this Court in its construction of Section 4921 R. S. U. S., have been set aside by the majority opinion of the U. S. Circuit Court of Appeals for the Eighth Circuit in the case at bar (although said majority opinion was dissented from by Sanborn, Circuit Judge, in his separate opinion in this case), as we shall now proceed to particularly point out.

That heretofore, to-wit, on August 19, 1909, in an opinion delivered by Riner, District Judge, concurred in by Van Devanter, Circuit Judge, but dissented from in a separate opinion of the same date delivered by Sanborn, Circuit Judge, on appeal from the Circuit Court of the United States for the Eastern Division of the Eastern Judicial District of Mis-

souri, in case No. 2857 in the said U. S. Court of Appeals for the Eighth Circuit, in which case your Petitioner was appellant and this Respondent was appellee, a certain final decree, found between pages 699 and 703 of the transcript of the record in this case, entered by the Circuit Court on the 5th day of March, 1908, was affirmed.

In affirming the said decree in and by its said opinion filed August 16, 1909, the said Majority of the United States Court of Appeals affirmed the following propositions:

That letters patent of the United States (being the letters patent involved in this suit and reproduced between pages 244 and 246 of the record) issued to George Westinghouse, Jr., for Electrical Converter, dated July 12, 1887, and numbered 366,362 were good and valid in law, particularly as to the fourth claim thereof, and that your Petitioner, was the owner of said letters patent and of all rights thereunder.

That George Westinghouse, Jr. was the first, true and original inventor of the inventions and improvements described and claimed in claim 4 of said letters patent.

That the Respondent herein, Wagner Electric Manufacturing Company, had infringed claim 4 of said letters patent and the exclusive rights of your Petitioner under the same, by making, using and selling electrical converters or transformers embodying in their construction and principle of operation the combination, substantially as described in said Westinghouse patent, of an electrical converter or transformer constructed with open spaces in its core, an inclosing case, and non-conducting fluid in said case adapted to circulate through said spaces and about the converter or transformer.

That the report of the Special Master, Henry H. Denison, Esq., to whom this cause had been referred by the interlocu-

tory decree entered in this cause on February 16, 1904, by the Circuit Court, (Record pp. 345-347), to take and state an account of damages and profits (for the report of said Master, see Record, pages 349 and 401), be disapproved and the exceptions thereto sustained, and it was ordered that your Petitioner was "entitled to nominal damages only on account of the infringing devices."

The said Special Master had found (Record 401) that your Petitioner was entitled to recover from this Respondent, on account of the manufacture and sale of the infringing transformers, as *profits* made by this Respondent, by reason of said infringement, the sum of $132,433.35.

In the confirmation of this judgment or decree by the majority of the Court of Appeals, not only has your Petitioner been deprived of $132,433.35, awarded to your Petitioner by the Master's finding, and also interest thereon from the date of the filing of the said Master's report (July 29, 1907), but a precedent has been established in the United States Circuit Court of Appeals for the Eighth Circuit which is in direct conflict with the decisions of the Supreme Court of the United States in analogous cases and is also in conflict with the decisions of the United States Circuit Courts of Appeal in other circuits of the United States—a precedent which, if allowed to stand, will eventually and necessarily destroy rights of property of inestimable value.

This petition is made not only because the question arising thereunder is one of great gravity and importance, affecting valuable rights of property, but chiefly "*in the interest of uniformity of decision*," the conclusions of the opinion of the majority of the Circuit Court of Appeals for the Eighth Circuit in this case, as well as the reasons given in the said opinion for the said conclusions, being, as above stated and

as we shall now proceed to demonstrate, in this petition and in the brief accompanying the same, in direct conflict with well settled principles and rules of law established by this Court and followed by Circuit Courts of Appeal in other circuits of the United States.

The letters patent involved in this suit relate to an electrical transformer or converter. The said letters patent are found in the record in this case, between pages 244 and 246. Claim 4 in suit is in the following words:

> "4. The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter."

The bill was filed on June 24, 1902. Before the bill was filed a contest had been had between your Petitioner and Respondent's Vendee, the Union Carbide Company, in the Second Circuit, with respect to these very identical letters patent and this identical claim 4. Less than one month before the bill in this case was filed, that is to say, on May 29, 1902, that contest culminated in an opinion rendered by the Circuit Court of Appeals for the Second Circuit, which opinion, as reported in the 117th Federal Reporter, between pages 495 and 501 thereof, was stipulated into this case at page 443 of the record. In and by that opinion the U. S. Circuit Court of Appeals for the Second Circuit affirmed the decree and opinion of the U. S. Circuit Court for the Western District of New York, which latter opinion is reported in 112th Federal Reporter between pages 417 and 431, that is to say: In the case of your Petitioner against Union Carbide Company, in which case the Circuit Court for the Western District of New York, on November 11, 1901, rendered an opinion and ordered a decree sustaining said letters patent No. 366,362

and finding that said Union Carbide Company, Respondent's vendee, in the *use* of certain transformers which said Union Carbide Company had purchased from this Respondent, said Union Carbide Company had infringed the above-recited claim 4 of the said letters patent No. 366,362, the Circuit Court in that case stating, at page 418 of 112 Fed.: "*The Wagner Electric Manufacturing Company of St. Louis, Missouri*" (which is this Respondent), "*furnished the alleged infringing transformers to the defendant and it may therefore be regarded as the real defendant in each case*".

In the opinion of the Court of Appeals for Second Circuit in the Union Carbide case (117 Fed. 497, 501), rendered May 29, 1902, the Court, referring to the opinion of the Court below as found in 112 Fed. 417 (see 117 Fed. 495), also found that the said letters patent were good and valid, sustained the same, found that the Union Carbide Company had infringed claim 4 thereof, and affirmed the decree of the Circuit Court as to said patent No. 366,362 (see 117 Fed. 501).

The form and construction of the infringing transformer made and sold by this Respondent to said Union Carbide Company, and the defendant's infringing transformer referred to in the opinions of the Circuit Court and Circuit Court of Appeals in the said case against the Union Carbide Company, is illustrated at page 168 of the record in the case at bar. As to that construction of transformer, found to have infringed claim 4 of the patent in suit, it is admitted on this record that, between the date of the filing of the bill (June 24, 1902) and six years prior thereto, this Respondent has made and sold, including the transformers sold to Carbide Co., 6524 infringing transformers for which it received the sum of $955,271.76. The answer in this case (in Paragraph IX thereof, at

page 13 of the Record), admits that this Respondent had been duly notified of the grant of the letters patent in suit and of its infringement thereof; and said paragraph of the answer contains the following admission in regard to the construction of Respondent's infringing transformers:

> "And this defendant admits that it has, since the 12th day of July, 1887, and subsequent to the assignment to the complainant, within the Eastern District of Missouri and elsewhere throughout the United States, made, used and sold devices or apparatus which embody the invention or discovery claimed in claim 4 of said letters patent."

Furthermore, with specific reference to the construction of transformer illustrated at page 168 of this record, after the pleadings in the case at bar were made up and in connection with the complainant's proofs-in-chief, the following stipulation was made and appears at page 19 of the record:

> "First. That the defendant prior to the filing of the bill of complaint herein, did manufacture and sell electrical transformers constructed and intended to be used as shown and described in figure 24 of an article which appeared in the issue of the 'American Electrician' for January, 1900, on page 13 thereof, said illustration showing a transformer having parallel primary and secondary coils and a core composed of thin plates of soft iron arranged in groups, said groups being separated from each other by blocks, thus providing spaces between the groups of plates; and the coils and core being enclosed in a metal case containing a non-conducting fluid which circulates through the open spaces in the laminated core."

It further appears on this record that on the accounting before the Master, Mr. Layman, the General Manager and

Treasurer of the Respondent company, admitted (Record 405, 406) that since June 21, 1896, which was six years before the filing of the bill, up to the date of the filing of the bill, this Respondent had manufactured and sold at least 6524 transformers similar in construction to the one illustrated at page 168 of the record, and each and all of which, in accordance with the admission in the answer hereinbefore recited and the stipulation hereinbefore recited, embodied in their construction the invention claimed by claim 4 of the Westinghouse patent in suit.

As the opinions of the U. S. Circuit Court and U. S. Court of Appeals in the suit against Union Carbide Co. show (see 112 Fed. 417 and 117 Fed. 495), and as the patent in suit itself shows, claim 4 of the said patent hereinbefore recited is the only claim which covers the converter or transformer described in the said letters patent *in its complete form and as an entirety.*

Therefore it stands admitted on this record and proved beyond question—a fact not questioned by the majority opinion of the U. S. Circuit Court of Appeals in the case at bar—that on the accounting before the Master it was established that between June 1896 and the filing of the bill of complaint herein, with full knowledge of your Petitioner's rights under the letters patent in suit, this Respondent had manufactured and sold at St. Louis, Missouri, 6524 infringing transformers, each and every one of which embodied, *as an entire and complete transformer*, precisely that invention the subject-matter of claim 4 of the patent in suit which had been passed upon and found infringed by the U. S. Circuit Court for the Western District of New York, in the case of your Petitioner against the Union Carbide Company, and by the U. S. Circuit Court of Appeals for the Second Circuit, in the same case, on appeal.

When your Petitioner filed its bill in the case at bar, it recited in Paragraph VI thereof the history of the litigation in the case against the Union Carbide Company, Respondent's vendee, and charged:

> "That the devices involved in the said suit, and which were used by the Union Carbide Company, the defendant therein, were manufactured and sold by the Wagner Electric Manufacturing Company, the defendant herein, and that said suit against the Union Carbide Company was defended by said Wagner Electric Manufacturing Company and was argued by its counsel, and that the matters and things found and decreed in the said suit against the Union Carbide Company are *res adjudicata* against the said Wagner Electric Manufacturing Company." (See Record 4, 5.)

In its answer the Respondent (in Paragraph VI and VII thereof) specifically and in detail admitted the allegations of the bill in respect to the prior litigation under this patent in the suit against the Union Carbide Company, and then stated in Paragraph VIII of the Answer (pages 12 and 13 of the record) as follows:

> "This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union Carbide Company was defended by this defendant and was argued by its counsel, and that the matters and things found and decreed in said suit against the Union Carbide Company are *res adjudicatae* against this defendant."

There was no contest in the Circuit Court nor in the Circuit Court of Appeals in the case at bar on the question as to whether or not these Union Carbide transformers and the 6524 infringing transformers accounted for before the Master infringed claim 4. That fact is conceded and has been

conceded throughout the litigation in this case. The only contest in the case at bar, prior to the interlocutory decree, found at page 745 of the record, was in regard to a certain "Type M" transformer made and sold by this Respondent *after* the decree in the Carbide suit. One question on the appeal to the U. S. Court of Appeals for the Eighth Circuit also related to that "Type M" transformer. On this petition we are not concerned with that "Type M" transformer. The Circuit Court found that said "Type M" transformer did not infringe claim 4. Therefore, when your Petitioner appealed the whole case, after the entry of the final decree, one of the questions before the U. S. Circuit Court of Appeals for the Eighth Circuit related to that "Type M" transformer. In the interlocutory decree in this case, (Record p. 345-347) entered February 16, 1904, by Adams, Circuit Judge, it was expressly found that respondent's original type or construction of transformer illustrated at page 168 of this record was an infringement of claim 4 of the patent in suit and the decree directed an accounting accordingly.

On that accounting your Petitioner sought to recover, not *damages*, but the *profits* which this Respondent had made, or which it could be estimated that the Respondent had made, by the manufacture and sale of said infringing transformers.

On the accounting the Respondent's position was that the profits made on these 6524 infringing transformers were so intermingled with the general profits of its business that they could not be separated therefrom; although Respondent gave the gross amounts received by it from the sale of said infringing transformers during each year covered by the accounting (Record, pp. *b.* and 442), the total sum thus received by Respondent from the sale of these infringing transformers accounted for, between the years 1896 and the filing of the bill, being $955,271.76. (Record 442).

The Treasurer and General Manager of the Respondent company contended, at one phase of the proofs, before the Master, that although he could give the number of infringing transformers and the price at which each of the said transformers was sold (a thing which he did), he could not, from the books of the Respondent Company *"or otherwise"* tell the cost of manufacture of these infringing transformers respectively, nor the profits made on the transformer business as distinguished from the other and general business of the Respondent. Your Petitioner, on the other hand, produced as witnesses persons who had been in the employ of the Respondent company during the time covered by the accounting, and showed from their testimony and from a sample blue print reproduced at page 726 of the record, that it had been the practice of the Respondent company, during the six years covered by the inquiry before the Master and up to the filing of the bill in this case, or at least up to the date of the decision in the case against the Union Carbide Company in November 1901, to make and keep most accurate detailed, written estimates of the cost of every item entering into the manufacture of these infringing transformers, including even the boxing and packing of the same for shipment.

It also appeared from the proofs before the Master, when the same witness, Layman, Treasurer and General Manager of the Respondent company, was called as a witness for the Respondent, that he admitted that the defendant had in its vaults inventories made annually or semi-annually in respect to these infringing transformers, yet the Respondent omitted to produce the same in evidence (Record 615-616), a fact found and referred to by the Master in his fourteenth findings of facts (Rec. 376-7.)

As a result, the Master found that the profits of the Respondent in the manufacture of the infringing transformers,

as nearly as could be reached through estimates, comparisons and apportionment, was approximately 25% on the net amount of the sales of the infringing transformers (Record 374-377), and recommended a judgment in favor of your Petitioner for the sum of $132,433.35, as the *profits* made by the Respondent from the manufacture and sale of the infringing transformers.

In overruling the findings of the Master on this point the majority of the Court of Appeals ignored completely the rule recognized and established by this Court in the cases of:

Crosby Valve Co. v. Safety Valve Co., 141 U. S. 447;
Rubber Co. v. Goodyear, 9 Wall. 802, 803, 804;
Manufacturing Co. v. Cowing, 105 U. S. 257-8;
Tilghman v. Proctor, 125 U. S. 148;
National Bank v. Insurance Co., 104 U. S. 54;

and other leading decisions of this Court, particularly pointed out in the brief in support of this petition, that:

1. Under circumstances such as those which appear in the record in this case, where the complainant seeks to recover the *profits* made by the defendant by reason of the infringement, the *profits* may be estimated by the Master on the data before him, especially where the Respondent has confused the *profits* with the *profits* of his general business, or has sought to conceal the *profits* actually made by him.

2. That in ascertaining profits made by an infringer a compensation is granted, "*computed and measured by the same rules that Courts of Equity apply to a case of a trustee who has wrongfully used the trust property for his own advantage.*" (Tilghman v. Proctor, 125 U. S. 148.)

3. And failed to pay that respect to the findings of a Special Master in this case which this Court has repeatedly decided must be paid to a Master's report, it being the law that

"the conclusions of the Master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part." Tilghman v. Proctor, 125 U. S. 136-149; Callaghan v. Myers, 128 U. S. 617, 666; Kimberly v. Arms Co., 129 U. S. 512-525; Crawford v. Neal, 144 U. S. 585; Furrer v. Ferris, 145 U. S. 132.

But the cardinal and most flagrant instance, in the light of the actual facts in the case at bar, of failing to recognize the rule established by this Court, and which seems to have been the controlling reason resulting in the majority opinion herein, holding that your Petitioner was not entitled to recover anything but nominal damages on account of the infringing transformers accounted for before the Master, is thus stated in the opinion of the majority of the Court.

> "It must of course be conceded that while appellant's combination, Claim 4, although really designed to keep the core from becoming overheated, also tended to keep the coils from becoming overheated, but the appellee's transformer much more efficiently accomplished the result desired by providing for a circulation of oil or other cooling medium through the open spaces between the coils and between the core and the coils, as well as through the open spaces in the core. We conclude, therefore, that the master was in error in finding that the entire commercial value of the infringing transformers manufactured and sold by the appellee during the time concerned in the accounting was due to the combination described in Claim Four of appellant's patent." * * * "The patented device covered by Claim Four, being, as we view it, a limited detailed claim and not being generally for a circulatory system throughout the heat producing parts of the transformer, and the appellee's infringing transformer embracing something of value not covered by that claim, viz: open spaces between the coils

and between the coils and the core, we are of opinion that the appellant, whose patent covered only part of the infringing device, is not entitled to recover all the profits made by the appellee, but only such as resulted from the patented invention."

In other words, assuming that the majority of the Court of Appeals is right in its facts involved in these statements (we are prepared to show from reference to the patent in suit that as to some of the facts here stated the opinion is wrong), it would follow, contrary to the opinions of this Court in Elizabeth v. Pavement Co., 97 U. S. 141, and contrary to other decisions to which we have more specifically referred in the brief in support of this petition, that: Where a patent is for a combination of devices forming an entirety or unit, and where the defendant has used that combination, adding thereto certain features which may be an improvement thereon, the burden of proof is on the complainant, not on the defendant, to show what proportion of the profits received by the defendant in the sale of these infringing transformers was due to the alleged improvements found in the infringing structure.

We respectfully submit that under the decisions of this Court in cases more particularly referred to in our brief in support of this petition, notably in the cases of Elizabeth v. Pavement Co., 97 U. S. 141, Hurlbut v. Schillinger, 130 U. S. 463, Crosby Valve Co. v. Safety Valve Co. 141 U. S. 441, where the complainant's invention is for a complete thing—a combination of elements as an entirety or unity—and the defendant has made and sold that combination, even if in the defendant's structure the defendant has superadded some improvements, *the burden of proof is on the defendant* to show what proportion of the profits received by the defendant from the sale of the infringing devices were due to such

alleged, real or imaginary, improvements, and the burden of proof in this respect is not upon the complainant.

Therefore, under the decisions of this tribunal, followed, as we show in our brief in support of this petition, by similar decisions by other Circuit Courts of Appeal in other circuits, it is utterly immaterial whether or not the Master was right or wrong in finding (as we believe he was entirely warranted in finding) that the entire commercial value of the infringing transformers manufactured and sold by the Respondent was due to the invention claimed by claim 4 of the patent in suit. The answer in this case, by Paragraph IX, (found at page 13 of the record) and the stipulation as to the Respondent's infringing transformers found at page 19 of the record, as well as the proofs before the Master, show that every one of the Respondent's infringing transformers, in construction, was like the structure illustrated at page 168 of the record, and that every one of Respondent's more than six thousand infringing transformers embodied the invention claimed by claim 4 of the patent in suit, and was therefore for a converter constructed as described in claim 4 and with an inclosing case and oil in the inclosing case. These facts being established, and it having been established that the Respondent has manufactured and sold more than six thousand of these infringing transformers, even if said infringing transformers did contain features which were improvements thereon, the burden of proof (under the decisions of this Court), was on the respondent to show exactly what proportion of the profits received by the Respondent were due to those improvements as distinguished from the precise, particular and improved invention claimed by claim 4 of the patent in suit.

In a case such as this one is, where the patented transformer is "*a complete combination in itself, differing from*

every other" (transformer), "*and the profit made by the defendant was a single profit derived from the construction of the*" (transformer) "*an an entirety*," the defendant having made and sold the said patented invention (the complete thing), "*as such,—the whole of it*," *prima facie* the entire "*single profit*" thus made by the defendant is due to the thing patented (Elizabeth v. Pavement Co., 97 U. S. 141; Hurlbut v. Schillinger, 130 U. S., 472). In such a case, if the Respondent in "*the form in which it clothed the*" (patented) "*invention*," to paraphrase the language of this Court in Crosby Valve Co. v. Safety Valve Co., 141 U. S. 444, 454, has improved on the form of embodiment of the invention as shown in the patent, nevertheless the Complainant is entitled to recover that "*single profit derived from the construction of the*" (invention) "*as an entirety*," unless the Respondent can show and does show (and the **burden is on the Respondent** to do so) what proportion of the "*single profit*" made on each of such infringing transformers was due to such improvement—was due to "*the form in which*" (Respondent) "*clothed the*" (patented) "*invention*"—so that such proportion of the profits can be separated out of the "*single profit*" obtained by the Respondent on the sale of each infringing transformer.

This is the law, clearly laid down by this Court in Elizabeth v. Pavement Co., 97 U. S. 141; Hurlbut v. Schillinger, 130 U. S. 456, 472; Crosby Valve Co. v. Safety Valve Co., 141 U. S. 444-454; and Rubber Co. v. Goodyear, 9 Wall. 802, 803, 804. It is also the law as laid down by other U. S. Courts of Appeal in other circuits, and the law as laid down in the case at bar by the dissenting opinion of Judge Sanborn.

In the case of Rubber Co. v. Goodyear, 9 Wall. 802, 803, this Court expressly held, not only that the defendant's profits on the infringing structures *may be estimated by the Master* where the defendant has confused the profits due to the infringement with the profits of its general business, but, referring to the Master's finding, says, at page 803 of 9 Wall.:

> "He refused to allow the profits due to elements not patented, which entered into the composition of the patented article. There may be cases in which such an allowance would be proper. This is not one of them. The manner in which the books of the Provident Company were kept rendered such an accounting impossible as to the business done in their name."

In other words, under the aforesaid decisions, even if it had been possible to have shown what proportion of the profits made by this Respondent on its infringing transformers was due to the form in which the Respondent clothed the invention of claim 4 of the Westinghouse patent in its infringing transformers, due to the alleged improvement therein, the burden of proof was on the Respondent and not on your Petitioner to show what proportion of the "*single profit*" derived by Respondent from the sale of its infringing transformers was due to such improvement.

Furthermore, the majority of the Court of Appeals in its opinion, in the parts which we have just quoted in this petition, is wrong, as a matter of fact, in two important respects. It is wrong in saying or implying that there was any departure from the patent in suit in the fact that the Respondent's infringing transformers had "*open spaces between the coils*", for this feature of open spaces between the coils is not only illustrated in Figure 2 of the patent in suit but the specifica-

tion of the patent in suit distinctly says, at page 1, beginning at line 65, of column 2, "*Preferably also the primary and secondary coils* C^1 C^2 *are separated from each other in a similar manner*", this sentence immediately following the previous sentence of the same patent beginning at line 62, which says: "*It may be sufficient in other instances to block the group of plates apart at intervals instead of extending the tubes the entire length.*"

The majority opinion of the Court of Appeals is also wrong in stating in this case, in the last sentence of its opinion hereinbefore quoted, that the invention of claim 4 of the patent in suit is not generally for a circulatory system throughout the heat producing parts of the transformer. On this record and in view of the estoppel arising on the record, on account of the things found and decreed in the Carbide case, by which the answer admits the Respondent is bound, the U. S. Circuit Court of Appeals for Second Circuit in the Carbide case had found (see pages 497 and 498 of 117 Fed.) that:

> "This claim" (claim 4 of the Westinghouse patent in suit) "covers such an inclosing case as will confine the non-conducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air-tight, closed converter." * * * * "In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

The decision of the majority of the Court of Appeals in this respect pays little heed to the rule laid down by this

Court in respect to combination claims and thus stated in Cantrell v. Wallick, 117 U. S. 694:

> "The first defense is based on the theory that a patent cannot be valid unless it is new in all its elements as well as in the combination, if it is for a combination. But this theory cannot be maintained. If it were sound no patent for an improvement on a known contrivance or process could be valid. And yet the great majority of patents are for improvements in old and well known devices, or on patented inventions. Changes in the construction of an old machine which increase its usefulness are patentable. Seymoure v. Osborne, 11 Wall. 516. So a new combination of known devices, whereby the effectiveness of a machine is increased, may be the subject of a patent. Loom Co. v. Higgins, 105 U. S. 580."

It also would seem to ignore completely the binding force and effect of the things found and decreed by the Circuit Court and Court of Appeals in the Carbide case, by which the Answer in this case specifically admits that this Respondent is bound.

"The matters and things found and decreed in said suit against the Union Carbide Company" (which) "are *res adjudicatae* against this defendant," as Paragraph VIII of the Respondent's answer in the case at bar admits (Record 12-13), are the following:

(1) That the letters patent in suit are good and valid.

(2) That George Westinghouse, Jr. was the inventor of the invention claimed by claim 4 of said letters patent.

(3) That the defendant in that case, which had *used* transformers precisely like the one illustrated at page 168 of the record in this case, made and sold to it by Wagner Electric Manufacturing Company (this Respondent), had infringed claim 4 of said patent.

(4) That by reason of this invention "by the arrangement of various known elements, to wit, dividing the iron into sections and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils may be carried on, aided by oil as an insulating material, and adding an inclosing case, a new combination, producing a new and beneficial result, not before attained, is" (was) "contributed to the art", by Mr. Westinghouse. "By this arrangement of the parts" (the combination claimed by claim 4) "a superiority was undoubtedly obtained, in durability, efficiency and cheapness over prior transformer devices."

(5) That said "invention of Mr. Westinghouse, consisting of a combination of elements, is" (was) "a distinctive step forward in the progress of electrology, *in the light of the immediate recognition which it received by the public.*" (Italics ours.)

(6). That the public instantly recognized the merit of the invention the subject-matter of said claim 4 as an improvement in the prior art.

(7). That "the proofs show that the maximum of large-size, dry transformers—transformers without sectional openings in the core and without the use of oil as an insulating material—is 10 kilowatts, or 13 to 14 horse power, while that of the large-size transformers of the Westinghouse patent in suit is 500 kilowatts, or from 650 to 700 horse power," all this being due to the invention claimed by claim 4 of the patent in suit.

(8) That in none of the devices of the prior art "*is found the combination of elements contained in the Westinghouse patent in suit*" and claimed by claim 4 thereof.

(The above are among the essential things *found* and *decreed* by the Circuit Court in the Carbide case. The follow-

ing are among the things *found* by the U. S. Court of Appeals for the Second Circuit in the Carbide case, confirming the things *found* and *decreed* by the Circuit Court in that case.)

(9) That "the claim here in suit (claim 4) was filed with the original application, and it was never cancelled or modified."

(10) That said claim 4 is for a new and most useful invention.

(11) "This claim covers such an inclosing case as will confine the non-conducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air-tight, closed converter."

(12) "It embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose."

(13) "In these circumstances the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

(14) "The practical result of the invention in suit" * * * "was to so increase the capacity of the converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts."

(15) "The decree" (of U. S. Circuit Court in the Carbide suit) "is affirmed as to patent No. 366,362" (the Westinghouse patent in suit).

Now, the only difference between the Respondent's infringing transformer accounted for before the Master and the invention actually claimed by claim 4 of the patent in suit (that difference being a slight modification adopted long after the date of the patent in suit) is, that in addition to having the open spaces in the core and everything else called for by claim 4, Respondent's infringing transformers also had some space between the inner surface of the core and the outer surfaces of the coils, through which space additional opportunity was given for the circulation of oil in and about the parts, thus carrying out, perhaps to a greater degree than by the identical means specified in claim 4, the very object of the invention claimed by claim 4. The patent in suit states (page 1, lines 16, etc.) that the object of the invention is "*to provide a simple and efficient converter which will not become overheated;*" and also (page 1, lines 80, etc.) that the liquid circulates through "*the intervening spaces of the coils and plates.*" Furthermore, the fact that the Respondent in its infringing transformers also had the additional feature of having spaces between the coils and the core, if said feature was really an improvement on the invention claimed by claim 4, such a construction was certainly in harmony with that invention as defined by the U. S. Court of Appeals for the Second Circuit in the Carbide case, at page 498 of 117 Fed., as follows:

> "In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of the converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within

and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

Clearly, then, the burden of showing what if any of the profits made by the Respondent in the sale of its said infringing transformers were due to this modification (improvement, if you will) of the invention claimed by claim 4 of the patent in suit was on the Respondent and not on your Petitioner, as pointed out by the decisions particularly referred to in our brief accompanying this petition, notably the decision of this Court in Elizabeth v. Pavement Co., 97 U. S. 141.

The vice in the majority opinion of the U. S. Court of Appeals for the Eighth Circuit and which vice conflicts with the settled rule in analogous cases laid down by the decisions of this Court and followed by the U. S. Courts of Appeal in other Circuits, as pointed out more particularly in our accompanying brief, lay:

(a) In holding that this slight modification in the infringing transformers (which transformers admittedly otherwise embodied the entire invention claimed by claim 4 of the patent in suit) was not, after all, within the invention of claim 4 as defined by the U. S. Court of Appeals for the Second Circuit in the Carbide case.

(b) That even if it be granted that that modified form of your Petitioner's patented invention was a betterment or improvement, nevertheless *the burden of proof* was not on your Petitioner but on the contrary *on the Respondent* to show what part of the Respondent's profits made on those infringing transformers was due to that improvement; and it was for this Respondent to separate out those profits due to that addition or betterment (if it was an addition or betterment) from the general profits made by Respondent on the infringing transformers accounted for before the Master. This thing, however, Respondent did not even pretend to do.

This cardinal error is the basis of the conclusion by virtue of which the majority of the Court of Appeals for the Eighth Circuit held that the Master's report and finding should be set aside.

But for these errors in its premises and consequently in its conclusion, it is manifest that the majority of the U. S. Court of Appeals for the Eighth Circuit would have agreed with Sanborn, Circuit Judge, reversed the decree of the Circuit Court as to the accounting, and confirmed the Master's report, thus giving your Petitioner a decree for $132,433.35, as recommended by the Master in his report filed July 29, 1907, plus interest from the date of said report, in accordance with the decision of this Court in Tilghman v. Proctor, 125 U. S. 136, 161.

Therefore your Petitioner believes that the aforesaid majority opinion of the U. S. Court of Appeals for the Eighth Circuit affirming the decree of the U. S. Circuit Court for the Eastern Division of the Eastern Judicial District of Missouri, thus depriving your Petitioner of a substantial recovery on account of the profits made by the Respondent in the manufacture and sale of its infringing transformers accounted for before the Master, is erroneous and in conflict with the decisions of this Court in analogous cases, as well as in conflict with the decisions of the U. S. Circuit Courts of Appeal in other Circuits; and has resulted in depriving your Petitioner of property rights granted to it by the Statutes of the United States; and that the patent laws, as construed in the case at bar by the majority opinion of the U. S. Court of Appeals for the Eighth Circuit, contrary to the opinion of this Court rendered by Chief Justice Marshall in the case of Grant v. Raymond, 6 Peters * 242, have not been construed so as "to execute the contract" (the patent) "fairly on the part of the United States."

We also respectfully submit, for the reasons stated in this petition for certiorari and more fully amplified in our brief in support of the same, that the majority opinion of the Court of Appeals for the Eighth Circuit in the case at bar, in a matter of gravity, where a large amount is involved, establishes a precedent which must necessarily affect almost incalculable values in the way of property rights under letters patent for inventions.

Wherefore your Petitioner respectfully prays: That a writ of certiorari may be issued out of and under the seal of this Court, directed to the United States Circuit Court of Appeals for the Eighth Circuit, commanding the said Court to certify and send to this Court, on a certain day to be therein designated, a full and complete transcript of the record of all proceedings of the said Court of Appeals in the said case therein, entitled Westinghouse Electric & Manufacturing Company, Appellant, v. Wagner Electric Manufacturing Company, Appellee, in Equity No. 2857, to the end that the said case may be reviewed and determined by this Court as provided in Section 6 of the Act of Congress entitled "An Act to establish Circuit Courts of Appeal and define and regulate in certain cases the jurisdiction of the Courts of the United States, and for other purposes, approved March 3, 1901," and that your Petitioner may have such other or further relief or remedy in the premises as to this Court may seem appropriate and in conformity with the said Act.

And your petitioner will ever pray.

THOMAS B. KERR,
PAUL BAKEWELL,
Solicitors and of Counsel for Petitioner, Westinghouse Electric & Manufacturing Company.

CERTIFICATE OF COUNSEL.

I certify that I am Solicitor and of counsel for the Petitioner herein, Westinghouse Electric and Manufacturing Company; that in accordance with the request of said Petitioner the foregoing petition has been prepared; that the allegations contained in said petition are true, to the best of my knowledge and belief; and that said petition is, in my opinion, well-founded in law as well as in fact.

PAUL BAKEWELL.

No. [redacted] 179

Supreme Court of the United States.

OCTOBER TERM, 1909.

Office Supreme Court
FILED
DEC 29 19
JAMES H. McKE

In Equity.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PETITIONER,

vs.

WAGNER ELECTRIC MANUFACTURING COMPANY, RESPONDENT.

BRIEF ON BEHALF OF PETITIONER FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE EIGHTH CIRCUIT.

THOMAS B. KERR,
PAUL BAKEWELL,
Solicitors and of Counsel for Petitioner, Westinghouse Electric & Manufacturing Company.

CLINTON & SPRINGER PRINTING CO., ST. LOUIS

Supreme Court of the United States.

OCTOBER TERM, 1909.

In Equity.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PETITIONER,
vs.
WAGNER ELECTRIC MANUFACTURING COMPANY, RESPONDENT.

BRIEF ON BEHALF OF PETITIONER FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE EIGHTH CIRCUIT.

The patent in suit, No. 366,362, dated July 12, 1887, is for "Electrical Converter." Claim 4 of said patent is the only claim which is for the electrical converter combined with an inclosing case and a non-conducting fluid, such as oil; it is as follows:

> "4. The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or

gas in said case adapted to circulate through said spaces and about the converter."

This claim is for a new combination of elements which performed a function and produced a result never before accomplished, making it possible to increase the capacity of the electrical transformer (converter) from 10 kilowatts, or 13 to 14 horse power, to 500 kilowatts, or 650 to 700 horse power. These results were due to the invention claimed by said claim 4, because that invention, for the first time in the art to which it relates, set forth and claimed the means by which the external and internal surfaces of the heat-producing parts of the transformer (converter) were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of the oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air. In the language of this Court in Elizabeth v. Pavement Company, at page 141 of 97 U. S., this invention "*was a complete thing, consisting of a certain combination of elements, and the defendant*" (in the infringing transformers accounted for) "*used it as such—the whole of it.*"

As is well-settled, claims in letters patent are each "independent inventions and in the nature of separate and distinct patents." Leeds & Catlin v. Victor Talking Machine Co., 213 U. S. 319; Russell v. Place, 94 U. S. 609.

The present suit, as well as the suit against Respondent's vendee, the Union Carbide Company (112 Fed. 417 and 117 Fed. 496), related only to said claim 4 of the said Westinghouse patent.

Paragraph VI of the Bill in this case (Record pp. 3-4) pleads the history of the suit against the Union Carbide Company, and that the U. S. Circuit Court for the Northern

District of New York found claim 4 valid and infringed, and that the U. S. Circuit Court of Appeals for the Second Circuit, composed of Hon. William J. Wallace, Hon. E. Henry Lacombe, and Hon. William K. Townsend, Circuit Judges, affirmed the said findings and decree of the Circuit Court; and Section VI. of the Bill (Record, pp. 4-5) concludes as follows:

> "That the devices involved in the said suit, and which were used by the Union Carbide Company, the defendant therein, were manufactured and sold by the Wagner Electric Manufacturing Company, the defendant herein, and that said suit against the Union Carbide Company was defended by said Wagner Electric Manufacturing Company and was argued by its counsel, and that the matters and things found and decreed in the said suit against the Union Carbide Company are *res adjudicata* against the said Wagner Electric Manufacturing Company."

The Respondent's Answer, in sections VI. and VII. (Record pp. 11-12), specifically admits the charges in paragraph VI. of the Bill, and paragraph VIII of the answer (Rec. pp. 12-13) is in the following words:

> "This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union Carbide Company was defended by this defendant and was argued by its counsel, *and that the matters and things found and decreed in said suit against the Union Carbide Company are res adjudicatae against this defendant.*" (Italics ours.)

The record in the Carbide case, including the opinion of Judge Hazel in the Circuit Court, which opinion is also reported in 112 Fed. 417-423, was offered in evidence by Re-

spondent (Record, p. 30); and by stipulation in this case (Record, p. 443) the opinion of the U. S. Court of Appeals for Second Circuit, as the same is reported in 117 Fed. 495-501, is before this Court.

The said decree, taken from said Union Carbide record which was offered in evidence by respondent (Rec. q. 30), is in the following words:

> "At a Stated Term of the United States Circuit Court for the Western District of New York, held in the United States Court and Post Office Building in the City of Buffalo, on the 22nd day of November, 1901.
>
> Present—Hon. John R. Hazel, Judge.
>
> Westinghouse Electric and Manufacturing Company, Complainant,
> No. 6854. vs. In Equity.
> Union Carbide Company, Defendant.
>
> This cause having been commenced by the filing of the bill of complaint and by service of subpoena upon the defendant; and the said defendant having duly appeared and having answered the said bill of complaint; and issue having been joined; and said cause having come on for final hearing upon the pleadings and upon proofs taken on behalf of both parties; and argument having been made by Thomas B. Kerr, Esq., for the complainant, and by A. C. Fowler, Esq., for the defendant, and due consideration having been taken of said arguments, pleadings and proofs, and of briefs filed on behalf of both parties,
>
> Now, therefore, on motion of Kerr, Page & Cooper, solicitors for the complainant, it is
>
> Ordered, adjudged and decreed that claim 4 of Letters Patent of the United States, No. 366,362, granted to George Westinghouse, Jr., on July 12, 1887, is good and valid in the law; that the said George Westinghouse was

the original, true and first inventor of the improvements set forth in said claim 4; that the complainant, Westinghouse Electric and Manufacturing Company, a corporation organized and existing under and by virtue of the laws of the State of Pennsylvania, is entitled to the exclusive right in and to the said Letters Patent, and in and to the invention described and claimed in claim 4 thereof; that the defendant, Union Carbide Company, a corporation organized and existing under the laws of the State of West Virginia, and having a regular and established place of business within this district, has within this district infringed upon claim 4 of Letters Patent No. 366,362; that the said defendant has violated the exclusive rights of the complainant under said claim 4 of Letters Patent No. 366,362; that the complainant do recover out of the said defendant the gains and profits by it made and the damages sustained by the complainant by reason of such infringement, as well as the costs and charges of this suit to be duly taxed; that it be referred to Harry L. Taylor, Esq., residing at Buffalo, N. Y., Master of this Court, to ascertain the amount of such gains and profits and the damages sustained by said complainant by reason of such infringement; and

It is further ordered, adjudged and decreed, that the complainant on such accounting have the right to cause an examination to be made of the defendant, Union Carbide Company, and any of its officers, agents, servants, attorneys, workmen and employees, *ore tenus* or otherwise, and also to cause the production of the books, vouchers and documents of the said defendant, and that the said defendant attend by its officers, agents, servants, attorneys and employees, before the Master from time to time within this district as the said Master shall direct; and

It is further ordered, adjudged and decreed that an injunction be issued in due form of law against the defendant Union Carbide Company, permanently restraining it, its officers, agents, servants, attorneys, work-

men and employees, and each and every of them, from making, constructing, vending, using or putting into practice the said invention or improvement recited or specified in Claim 4 of Letters Patent No. 366,362, or in any manner infringing upon the claims of said patent, or any of them, or upon the rights of the complainant thereunder.

JOHN R. HAZEL,
U. S. Judge.

Approved: A. C. Fowler for defendant."

From the above-quoted decree and from the opinions of the Circuit Court for the Northern District of New York and the Court of Appeals for the Second Circuit, so far as said opinions relate to the Westinghouse patent in suit, we shall understand what were "*the matters and things found and decreed in said suit against the Union Carbide Company*", which paragraph VIII of the Answer specifically admits are "*res adjudicatae against this defendant,*" (the Respondent here).

The said opinions are entitled in two cases, one being the case already referred to of Westinghouse Electric & Manufacturing Co. v. Union Carbide Company, and the other being the case of The Thomson-Houston Electric Company, vs. Union Carbide Company. These two cases were tried together, one relating to this Westinghouse patent No. 366,362, and the case of Thomson-Houston Electric Co. v. Union Carbide Company relating to the Thomson patent No. 508,654. We are here only concerned with the Westinghouse patent which was involved in the case of Westinghouse Electric & Manufacturing Co. v. Union Carbide Company, and we shall only here quote such parts of the said opinions as relate to the Westinghouse patent No. 366,362.

The opinion of the Circuit Court for the Northern District of New York in said Carbide Case, as found reported in 112 Fed. 417-423, and as found in the Union Carbide record, so far as the same relates to Westinghouse patent No. 366,362, is in the following words:

> "Hazel, District Judge. These two suits in equity for infringement of United States letters patent No. 366,362, granted to George Westinghouse, Jr., July 12, 1887, and No. 508,654, issued to Elihu Thomson, November 14, 1893, substantially relate to the same general subject. They are for improvements in electrical converters or transformers. The suits were heard at the same time by consent of parties. The complainants own the patents by assignments, and are jointly interested as cross licensees. Patent No. 366,362 relates to the construction of an apparatus for transforming alternating currents 'into currents differing therefrom in certain characteristics.' The object of the invention is thus stated in the patent:
>
> > 'To provide a simple and efficient converter, which will not become overheated when employed for a long time in transforming currents of high electromotive force, and which will be thoroughly ventilated.'
>
> The specifications, after describing in detail the accompanying drawings, which set forth features of the invention, contain the following:
>
> > 'It may be preferred in some instances to surround the converter with some oil or paraffin or other suitable material, which will assist in preserving insulation, and will not be injured by heating. This material, when in a liquid form, circulates through the tubes *and the intervening spaces of the coils and plates*, preserves the insulation, excludes the moisture, and cools the converter.' (Italics ours.)
>
> The patent has five claims. The fourth only is stated to be infringed. It reads as follows:

'The combination, substantially as described, of an electric converter, constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter.' * * * *

"The answer in each case pleads anticipation and want of novelty. *It was stipulated at the time of taking proofs that defendant had in use one or more transformers, described by patents in suit, at its works, subsequent to the grant and assignment of said patents to complainants. If, then, the defense of anticipation and want of novelty fails, infringement is admitted. The Wagner Electric Manufacturing Company of St. Louis, Mo., furnished the alleged infringing transformers to the defendant, and it may therefore be regarded as the real defendant in each case.* A brief recital of the state of the art will aid to a better understanding of the patents. The discovery and perfection of mechanical generators for the production of electrical current energy demanded an exact distribution and apportionment of the generated electricity for its employment in the many uses to which it could be commercially applied. By the generator an alternating current is produced, which changes uniformly in strength and intensity, and flows successively in one direction, until it reaches a maximum, and thereupon gradually diminishes in intensity until it ceases, only to immediately begin its flow in the opposite direction. For this reason great difficulty was experienced in bringing this powerful current, for the purpose of distribution, within such desired control as to permit its utilization for lighting, power, and many other purposes. Commutators having for an object the rectifying of alternating currents so as to secure uniformity of direction were invented, and proved highly successful. An apparent obstacle, however, was the limitation which the use of the commutator and dynamo imposed upon the generating capacity, and upon the distance to which the electricity could be transmitted and assigned for its useful and extensive

application. The practicability of varying the volume and pressure of a primary and secondary current, so called, with reference to each other, was completely demonstrated by changing the relative length of the primary and secondary circuits within the influence of an alternating magnetic field. This was accomplished by the numerical arrangement of the coils encircling the core. In this manner a volume and pressure of the induced and inducing current may be equalized. By similar arrangement, or by the varying size, thickness, character, or stability of the surrounding coils, a current of the desired intensity is obtainable. Thus the problem of simultaneous generation of electricity and its distribution at either high or low pressure was solved. The apparatus required for this purpose was named a converter or induction coil, and latterly a transformer. It is composed of two coils of insulated copper wire, wound around an iron core or frame near each other. They are designated primary and secondary coils, respectively. The former initially receives the electric current from the generator, and magnetizes the core, which thereupon becomes a conductor from the primary to the secondary coil. The particular purpose and object of transformers is tersely stated in defendant's brief to be 'an apparatus whereby the current is generally transformed or converted from a certain pressure and quantity to a certain other pressure and quantity, or it may be transformed or converted to the same pressure or quantity, but usually is transformed or converted from a higher pressure and smaller quantity to a lower pressure and larger quantity, in order that the higher pressure may be transmitted on the lines outside of buildings, and transformed or converted to lower pressure and greater quantity for use in buildings.' Their utility is well established. It has resulted in the expansion of the use of electric energy to such an extent that there is substantial basis for the claim that the invention of the static transformer and subsequent improvements has created a surprisingly mem-

orable period in the development of electric science, followed by amazing commercial success. It made possible the utilization of electricity at far distant points, as well as its application in various ways, 'and in any desired machine, from motors developing hundreds of horse power to the fragile filaments of incandescent lamps.' Noteworthy as was the success attained by the generator, dynamo, and commutator, the surprisingly noteworthy advance in electrology made possible by the transformer is equally deserving of great praise. That improvements were needed to adapt the transformer to the manifold uses anticipated by those skilled in the art is not astonishing. *The necessity of rapidly magnetizing and demagnetizing the core in a transformer resulted in the production of a great amount of heat, and a consequent loss of electrical energy.* In order to obviate this difficulty, the plates which constitute the core were made of laminated iron, so as to suppress the Eddy currents in the core which caused the heating. This brings on a discussion of the patents in suit. The core of the Westinghouse patent is composed of thin plates of soft iron, in groups having sectional openings, and separated by thin sheets of paper or other insulating material. The insulating material is so arranged as to magnetically separate the plates in pairs. The method of constructing an induction coil or transformer having a core of thin plates is disclaimed by the patentee. It is not claimed to be new in the art to arrange a transformer so as to accomplish a means of ventilation of the parts, and thereby prevent a waste of energy through heating.

"The claim is that by the arrangement of various known elements, and by the introduction of new elements, to-wit, dividing the iron into sections, and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils may be carried on, aided by oil as in insulating material, and adding an inclosing case, a new combination, producing a new and beneficial re-

suit, not before attained, is contributed to the art. The mechanical parts of the transformer are immovable and compact. They are so constructed as to enable the employment of a closed circuit of magnetic material. *By this arrangement of the parts a superiority was undoubtedly obtained in durability, efficiency, and cheapness over prior transforming devices. The tendency of the transformers to become overheated, however, was an obstacle retarding their use for long-distance lighting, transmission of power, and other purposes. It was at this period that the Westinghouse patent in suit was conceived.* Both the Westinghouse and Thomson patents in suit are for a combination of old and new elements. It is well settled that the right to patentability is established when the combination performs new and additional functions, and accomplishes new and additional results. 1 Rob. Pat. Sec. 115; Cantrell v. Wallick, 117 U. S. 695, 6 Sup. Ct. 970, 29 L. Ed. 1017. What was the achievement of the Westinghouse and Thomson patents? The proofs show that more or less experimenting was required to develop the transformer in the then state of the art, so as to secure the transmission of higher electrical energy. The disposition of heat was a most serious question. Different sizes of transformers, varying from one-half kilowatt to seven and one-half kilowatts were then in commercial use. Larger sizes (fifteen to thirty kilowatts) had been started experimentally. In employing the larger sizes, a lower current density in the copper and lower magnetic density in the iron was necessary than in the smaller sizes. This greatly increased the expense of production of the required electrical energy. Later experiments proved the efficacy of filling the transformer cases with oil for reducing the temperature, and thereupon fifteen and thirty kilowatt transformers were advantageously operative, although heat convection still continued of such a nature as to require additional thought and labor. What Westinghouse failed to accomplish was later successfully performed by the invention of Thomson.

"*I am of the opinion that the invention of Westinghouse, consisting of a combination of elements, unless anticipated by the prior state of the art, is a distinctive step forward in the progress of electrology, in the light of the immediate recognition which it received by the public.* It does not seem to me, under the circumstances, to have been obvious to those skilled in the art." * * * * * "*The public instantly recognized both patents in suit as an improvement on the prior art.* Indeed, the proofs show that the maximum of large-size dry transformers—transformers without sectional openings in the core, and without the use of oil as an insulating material—is 10 kilowatts, or 13 to 14 horse power, *while that of the large-size transformers of the Westinghouse patent in suit is 500 kilowatts, or from 650 to 700 horse power.* The use of coils of pipe through which water can be circulated, and which are placed in the oil of the static transformer, found in the Thomson patent, increases the number of kilowatts to at least 2,000. The union of elements contained in the two patents in suit is not embraced or contained in any similar patented devices. The defendant contends that the various elements of claim 4 in the Westinghouse patent, and claims 1 and 2 of the Thomson patent, are old. *Old though some of them are, they have been joined together for the first time by the patentees, who are the original and first inventors. Simple though the inventions may appear, they were produced as a result of labor and study.* The degree of labor and thought is unimportant, in view of the practical utility of the invention. Many v. Sizer, 1 Fish. Pat. Cas. 17, Fed. Cas. No. 9,056; Carr v. Rice, 1 Fish. Pat. Cas. 198, Fed. Cas. No. 2,440. *The combination adopted by the complainants in each suit produces a new result, dependent upon the union of various elements never before combined together. The result is not merely an aggregation of the component parts, but a co-operation of all the elements producing a new result by their union.* Hailes v. Van Wormer, 20 Wall. 353, 22 L. Ed. 241; Reckendorfer v. Faber, 92 U. S. 357, 23 L. Ed. 719; Pickering v. McCullough, 104 U. S. 318, 26 L. Ed. 749.

"I have given examination to such of the patents as are claimed on argument to anticipate the combinations of the patents in suit. I incline to the belief that the elements of the patents in suit, constituting the combination for which the patents were issued, are not anticipated. *I have already stated that in my judgment the various elements found in both patents sued on have never before been combined together, and that the union of elements contained in each patent is not embraced in any similar patented inventions. The combination itself being new, the effectiveness and efficiency of both transformers being increased,—a fact quickly recognized by the public,*—it becomes obviously unnecessary to especially point out in detail the various differentiating structural features found in patents claimed to be anticipatory. Many of the patents cited to anticipate the Westinghouse patent relate to patents for dynamo-electric machines and other electrical devices, including transformers. None of them point out a way to dissipate the heat, although a number of them were designed to prevent waste energy produced by heat. *In none of them is found the combination of elements contained in the Westinghouse patent in suit.* The Pike and Barnett patents are for transformers immersed in oil, in a casing connected with pipes passing to an elevated oil receptacle stationed near the transforming apparatus, for the purpose of increasing the radiating surface. The liquid is maintained in constant circulation around and through the coil by the change of specific gravity due to the change of temperature of the oil. The heat may be extracted by a water jacket connected with the vessel containing the oil. In the Thomson patent, as we have seen, a coil of the pipe through which the water constantly circulates passes through the transforming chamber and oil or other conducting fluid contained therein. No extended external surface or separate apparatus is required to make the Thomson patent operative. A receptacle or chamber is constructed of sufficient size to contain one or more transformers surrounded by oil. The oil is cooled

in the transforming chamber, and not, as in the Pike and Barnett patent, in a separate vessel elevated from the transformer, and evidently was, as the patent states, designed to be built into walls of buildings or located in underground chambers. I do not think these patents anticipate that of Thomson. None of the others, in view of what has been stated, need be discussed.

"The point is made by defendant that, inasmuch as various claims contained in the original application filed in the patent office for the Westinghouse patent in suit were rejected by the commissioner of patents, were thereafter canceled, and substitution of other claims allowed, the patentee conceded, among other things, that open spaces between the coils were not new, nor was it new to have gas or non-conducting fluid adapted to circulate through the spaces and about the transformer. *All that may have been done by the patentee, yet a patent for a combination of old and new elements, co-operating together, was granted him by the patent office, and the presumption of patentability to which he is entitled by reason thereof has not been overcome by the defendant.* The Westinghouse patent stated that the plates are preferably separated, and that it may be preferred in some instances to surround the transformer with oil or paraffin or other suitable material. It is stated by the patent that 'the converter or transformer may be sealed in an inclosing case, and may or may not contain a non-conducting fluid or gas.' It is insisted that these are matters of preference or recommendation only, and do not constitute essential features of the patent, but this, however, must be read with claim 4 of the patent. It is quite true that a feature which is mentioned only by way of recommendation in describing an invention must usually be considered as a subordinate, and not an essential, part of the patent. Holliday v. Pickhardt (C. C.) 29 Fed. 853; Sewall v. Jones, 91 U. S. 171, 23 L. Ed. 275; Ansonia Brass & Copper Co. v. Electrical Supply Co., 144 U. S. 11, 12 Sup. Ct. 601, 36 L. Ed. 327; Krajewski v.

Pharr, 44 C. C. A., 572, 105 Fed. 514. But the claim upon which complainant relies still clearly indicates the intention of the patentee to claim as essential the features described by the specifications as preferably employed.

Decree for complainant may be entered in each case." (Italic ours.)

The opinion of the Court of Appeals for the Second Circuit in the case of Westinghouse Electric & Manufacturing Co. v. Union Carbide Company, stipulated into this case at page 143 of the record, and reported in 117 Fed. 495-501, so far as the said opinion relates to the Westinghouse patent No. 366,362 (the patent in issue here), is as follows:

"The specification of the Westinghouse patent in suit states its subject-matter as follows:

'The invention relates to the construction of a class of apparatus employed for transforming alternating or intermittent electric currents of any required character into currents differing therefrom in certain characteristics. Such apparatus are usually termed "induction coils" or "converters". '

"This apparatus comprises a core of soft iron wound with two coils of insulated copper wire,—the one a primary coil, which receives and transmits the magnetic current; the other, a secondary coil, which transforms the pressure and quantity of the current according to the purpose for which it is required. The type of transformer here under consideration is known as the 'step-down transformer.' A current of high pressure and small volume transmitted from a distance may, by its use, be transformed to a current of low pressure and large volume, and then adapted for ordinary household uses. The object of the Westinghouse improvement is stated by the patentee as follows:

'The object of this invention is to provide a simple and efficient converter, which will not become overheated when employed for a long time in transforming currents of high electromotive force, and which will be thoroughly ventilated.'

"The patentee primarily proposed to obviate the serious objection of loss of energy by overheating involved in such transformation by separating the plates of the core and the primary and secondary coils from each other, so as to permit of ventilation. This construction adapted for ventilating purposes is covered by the other claims not in suit, and is not involved herein. The particular construction which is the subject of the fourth claim,—the only one involved herein,—is suggested as follows:

'It may be preferred in some instances to surround the converter with some oil or paraffin or other suitable material, which will assist in preserving insulation, and will not be injured by heating. This material, when in a liquid form, circulates through the tubes and the intervening spaces of the coils and plates, and preserves the insulation, excludes the moisture, and cools the converter. The entire converter may be sealed into an inclosing case, H, which may or may not contain a nonconducting fluid or gas.'

"Said claim is as follows:

'(4) The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a nonconducting fluid or gas in said case, adapted to circulate through said spaces and about the converter.'

"Complainant contends that this claim covers a transformer whose surfaces are cooled by means of oil circulating through said open spaces in said core and confined in said inclosing case. The first objection raised to this contention is estoppel by reason of proceedings

in the patent office. There the patentee, it is true, erased a claim for a combination of a converter and inclosing airtight case, and a fluid therein, which was identical with the claim in another pending application, and modified his claims for ventilating spaces between the core and the coils. *But the claim here in suit was filed with his original application, and it was never canceled or modified.* That other combinations originally claimed by him were old appears from the prior art. Converters having open spaces in the core to avoid heating were old. In the Hindley & Buffham patent of 1882 (No. 266,290), for a generator, is disclosed the arrangement of wires 'whereby openings or spaces are provided for the free circulation of air,' in order 'to overcome in a great degree the generation of heat'; and the patentees describe the winding of the coils 'in separate groups, so that air can freely circulate through them.' And in this patentee's earlier patent, No. 342,553, of 1886, he stated that its object was to 'construct the converter in such manner that there shall be but little loss of energy through heating the iron,' and described a core composed of thin plates 'separated from each other by intervening washers or plates of nonmagnetic material, —such as vulcanized fiber,—and an air space may be left, if desirable, between each two plates.' The use of oil or other nonconducting fluid to reduce the conductivity of the wire coils of a dynamo when driven at a high speed and thus reduce the heat is described in the Millar patent, No. 270,457, of 1883.

"Defendant's counsel chiefly rely on the Stanley patent No. 349,612 of 1886, for an induction coil, in which, they say, they 'have the identical combination of the fourth claim of the Westinghouse patent.' This patent is for a converter. The plates of the core are so stamped as to form interior and exterior teeth. Of the plates the specification says:

'They are placed upon each other, the positions of the teeth coinciding; but they are insulated or sep-

arated from each other by paper, cloth, asbestus, oil silk, air, or other well-known insulating material, and they are firmly bolted or otherwise secured together.'

"The specification further says:

'The coil is preferably protected by being placed within a suitable case consisting of a base F, to which there is secured a removable cover, F'. In the cover there are preferably formed perforations, *f*, *f*.'

"Although the drawings do not show open spaces in the core, and defendant's expert assumes that there are no such spaces, yet it appears from the foregoing description that the patentee conceived the idea of a separation of the plates either so as to admit air or to provide for the insertion of some fabric for purposes of insulation. The description and drawings of the Stanley patent show a base plate and perforated cover adapted to ventilate the converter and to protect it from physical injury. We have, then, in the prior art every element of the combination claimed, and a physical combination of the same elements, except that the separations in Stanley are not adapted to, and the construction of the inclosing case is prohibitive of, the purposes of the claim in suit. *This claim covers such an inclosing case as will confine the nonconducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air-tight, closed converter.* Does the combination covered by the claim in suit show patentable invention? If the idea of ventilation be rejected, and the patent be confined to the statement of and claim for the inclosed construction, *it embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose.* The primitive telegraph coils of the Brooks patent of 1878 were immersed in oil 'to protect them from the influence of the damp atmosphere'; and the Miller dynamo, without open spaces in its core, had its coils suspended in a tank of oil. But the construction of

these devices excluded the novel idea of oil which would 'circulate through the tubes and intervening spaces of the coils and plates.' And while the assumed or suggested separations between the plates of the Stanley patent would be sufficient for insulation only, and not for circulation, its inclosing case is not sealed so as to contain the circulating oil, and the use of oil is not suggested. *In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.* If there is any doubt upon the question of patentability, the practical and commercial results of this improvement must resolve such doubt in its favor.

"It appears that in the early history of the art only small converters were used, and the heat generated in them was dissipated by radiation into the surrounding air. But when the art began to call for converters exceeding 10 kilowatts in capacity, it was found, as stated by the expert for complainant, 'that the capacity of the transformer increased as the cube of the linear dimensions, and the heat, if the amount of loss was held stationary, would increase in like proportion, while the radiating surface would increase only as the square of the linear dimensions.' Further difficulties were encountered, resulting from the inequality of the conductivity of iron and copper. The testimony herein shows that these difficulties were so serious that for some time it was feared that the practical limit of such transformers had been reached; that experiments were made by grouping, by the use of lower current densities, by filling the cases with oil, and by subdividing the iron and copper parts of the converters by large ducts and using forced drafts. It was only when, as the result of these experiments, it was found that the oil would cir-

culate through the ducts that any practical progress was made. Then, as complainant's expert says, 'the problem of making large units became greatly simplified. It became only necessary to so subdivide the coils and iron so as to expose a uniform surface as compared with the losses in the transformer in all sizes, and to provide a case having sufficient external surface to enable the oil again to give up its heat to the surrounding air, to make transformers of any desired capacity.' *The practical result of the invention in suit, as testified to by complainant's experts, was to so increase the capacity of converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts,*" * * *

"The decree is affirmed as to patent No. 366,362." * * * (Italics ours.)

After the decision of the U. S. Court of Appeals for the Second Circuit in the case against the Union Carbide Company, your Petitioner, on June 24, 1902, filed its Bill in the present case in the United States Circuit Court for the Eastern District of Missouri, Eastern Division, against this Respondent, Wagner Electric & Mfg. Company, to enjoin this Respondent from further infringement and to recover from the Respondent the profits which this Respondent had made *by the manufacture and sale of infringing transformers*, including those sold to said Carbide Co.

In its Answer in this case this Respondent made the following admission as to its past infringement, which is found in paragraph IX. of the Answer (at page 13 of the record):

"And this defendant admits that it has, since the 12th day of July, 1887, and subsequent to the assignment to the complainant, within the Eastern District of Missouri and elsewhere throughout the United States, made, used and sold devices or apparatus which embody

the invention or discovery claimed in claim 4 of said letters patent;" * * *

After proofs were taken in this case, and on February 16, 1904, an interlocutory decree was entered in this case by Hon. Elmer B. Adams, Circuit Judge, (Rec. pp. 345-347). That decree, so far as any question arising on this application for certiorari is concerned, is in the following words:

"Interlocutory Decree.

"This cause having come on to be heard upon the pleadings and proofs herein,

"It is Ordered, Adjudged and Decreed as follows:

"That letters patent of the United States issued to George Westinghouse, Jr., for Electrical Converter, dated July 12, 1887, and numbered 366,362, and duly assigned to the complainant Westinghouse Electric & Manufacturing Company are good and valid in law, particularly as to the fourth claim thereof, and that complainant, Westinghouse Electric & Manufacturing Company, is the owner of said letters patent and all rights thereunder.

"That George Westinghouse, Jr., was the first, true and original inventor of the inventions and improvements described and claimed in claim 4 of said letters patent.

"That the defendant herein, Wagner Electric Manufacturing Company has infringed the fourth claim of said letters patent, and upon the exclusive rights of the complainant under the same, by making, using and selling electrical converters or transformers embodying in their construction and principle of operation the combination, substantially as described in said Westinghouse patent, of an electric converter or transformer constructed with open spaces in its core, an enclosing case, and a non-conducting fluid in said case adapted to circulate through said spaces and about the converter or transformer.

"That complainant do recover of the defendant the profits, gains and advantages which the said defendant has derived, received or made by reason of said infringement by said defendant of claim 4 of the said Westinghouse patent No. 366,362, and that the complainant do recover of the said defendant any and all damages which the complainant has sustained by reason of said infringement by said defendant in the manufacture, use or sale of electrical transformers or converters, found to be in infringement of claim 4 of said Westinghouse patent No. 366,362 as hereinbefore specified, or any electrical converters or transformers which embody in their construction and principle of operation the combination substantially as described in said Westinghouse patent, of an electric converter or transformer constructed with open spaces in its core, an enclosing case, and non-conducting fluid or gas in said case adapted to circulate through the spaces and about the converter.

"And this cause is hereby referred to Henry H. Denison, Esq., as Special Master to take and state an account of said gains, profits and advantages, to assess such damages and to report thereon with all convenient speed; and that the defendant herein, said Wagner Electric Manufacturing Company, its directors, officers, attorneys, clerks, servants and workmen, are hereby directed to attend before said Master from time to time as required and to produce before him such books, papers, vouchers, and documents and to submit to such oral examination as the Master may require.

"That a perpetual injunction issue out of and under the seal of this Court, directed to said fendant, Wagner Electric Manufacturing Company, its officers, directors, agents, attorneys, clerks, servants, and workmen, enjoining and restraining them, and each of them from, directly or indirectly, making, or causing to be made, using, or causing to be used, or vending to others to be used in any manner, any electrical converters or transformers containing, embodying or employing the said

inventions or improvements claimed by the fourth claim thereof, or from infringing or violating the said letters patent No. 366,362, as to the fourth claim thereof, in any manner whatsoever."

In acordance with the said decree, this case proceeded before the Special Master, Henry H. Denison, Esq., on the accounting, the complainant, on said accounting, not asking for *damages* but for the *profits* made by the defendant on account of the infringement found. All the evidence on the accounting was reduced to writing and taken before the Master and is found in the record between pages 403 and 693, and after a large amount of time consumed in the taking of testimony and after the matter had been under advisement by the Master for a long time, and your Petitioner relying also *on the record in this case and the things found and decreed in the said Carbide case*, on July 29, 1907, the Master filed his report which is found in this record between pages 349 and 401, which report contains, among other things, various findings of fact tabulated in this record between pages 374 and 375, with the result that the Master recommended that a judgment be entered in this case in favor of your Petitioner and against Wagner Electric Manufacturing Company for the sum of $132,433.35. The reasons compelling the Master to make this recommendation and these findings are fully set forth in the Master's report, between pages 349 to 401 of record.

Thereafter, on August 28, 1907, this Respondent filed its exceptions to the Master's said report, and after argument of said exceptions, Hon. David P. Dyer, District Judge, entered an order (Rec. pp. 698-699), as follows:

"This cause having heretofore come on to be heard upon the exceptions filed by said defendant to the report of Henry H. Denison, Esq., to whom as Special Master

this cause had been referred for the purpose of stating an account of the damages and profits derived by said defendant from the unlawful infringement heretofore decreed herein, and said exceptions having been duly submitted to the Court upon the arguments and briefs of counsel, the Court now being fully advised in the premises doth order that said report be disapproved and said exceptions sustained in so far as said exceptions are directed to the findings of said Master as to the amount of profits derived by said defendant from the sale of the infringing electrical transformers and to the recommendation of said Master for the entry of a judgment for the amount of profits so found, for the reasons set forth in the opinion of Court this day filed, and in lieu thereof the Court doth now enter a finding upon said accounting for nominal damages in the sum of One Dollar; it is therefore

Considered, Adjudged and Decreed that the decree heretofore entered on February 16th, 1904, including the injunction awarded thereby be and the same are hereby confirmed and made final; and that said complainant do have and recover of said defendant the sum of One Dollar so found as aforesaid, and also its costs and charges herein expended upon said accounting, for all of which execution may issue as at law."

Afterwards and on the 5th day of March, 1908, a final decree was entered by the Circuit Court in this case (Rec., 702 and 703), which decree, so far as it is relevant to this petition for certiorari, is in the following words:

"And the cause now coming before the Court for the entry of a final decree, it is

Ordered, Adjudged and Decreed:

"1. That letters patent of the United States, issued to George Westinghouse, Jr., for Electrical Converter, dated July 12, 1887, and numbered 366,362, and duly assigned to the complainant, Westinghouse Electric &

Manufacturing Company, were good and valid in law, particularly as to the fourth claim thereof during the term of seventeen years from the said 12th day of July, 1887, down to and including the date of their expiration on July 12, 1904, and that the complainant, Westinghouse Electric & Manufacturing Company was the owner of the said letters patent and of all the rights thereunder during the said term of seventeen years.

2. That George Westinghouse, Jr., was the first, true, and original inventor of the invention and improvement set forth in claim four of said letters patent.

3. That the defendant herein, Wagner Electric Manufacturing Company, has infringed the fourth claim of said letters patent, and has infringed the exclusive rights of the complainant under the same, by making, using and selling electrical converters or transformers embodying in their construction and principle of operation the invention, substantially as described in said Westinghouse patent, of an electric converter or transformer constructed with open spaces in its core, an enclosing case, and a non-conducting fluid in said case adapted to circulate through said spaces and about the converter or transformer.

4. That the said letters patent and the complainant's rights thereunder, did expire on July 12, 1904.

5. That the complainant is entitled to recover only nominal damages of one dollar because of the defendant's infringement of claim 4 of the said letters patent.

6. That the complainant is not entitled to recover any sum or amount as gains, profits and advantages made, derived or received by the defendant by reason of infringement of claim four of said letters patent in suit."

Your Petitioner appealed from the said final decree, not merely in respect to the accounting feature of the case, but also in respect to a certain Wagner "Type M" transformer,

with which form of transformer we are not concerned on this petition for certiorari. The result of that appeal was that on the 16th day of August, 1909, a majority opinion was rendered in this case by Hon. Riner, District Judge, concurred in by Hon. Van Devanter, Circuit Judge, the conclusion expressed in that opinion, so far as the accounting feature of the case is concerned, being that your Petitioner "*is entitled to nominal damages only on account of the infringing device,*" and that therefore the decree of the Circuit Court "must be affirmed." The majority opinion also concurred in the conclusion reached by Judge Adams, in the Circuit Court, that what was known as "Type M" transformer was not an infringement of claim 4 of the patent in suit. However, as heretofore stated, we are not concerned on this petition for certiorari with the so-called "Type M" transformer, as this petition is limited solely to the accounting feature of the case, which has to do only with transformers which are admittedly infringements of claim 4 of the Westinghouse patent in suit.

On the same day that the United States Court of Appeals for the Eighth Circuit filed its said majority opinion, Sanborn, Circuit Judge, wrote a dissenting opinion in which he disagreed with the majority of the Court, not only to the effect that your Petitioner was entitled to recover, as Respondent's profits, the amount found by the Master, but also that the "Type M" transformer was an infringement of claim 4 of the Westinghouse patent. Our present petition for certiorari is based upon the fact that the majority opinion of this Court is clearly in opposition to and out of harmony with established principles which have been fixed by decisions of this Court, for reasons very clearly set forth in the minority opinion of Judge Sanborn, to which opinion we respectfully refer this Court.

THE THING CLAIMED BY CLAIM 4 OF PATENT IN SUIT.

Claim 4 of the Westinghouse patent in suit is the only claim involved here and is the only claim of the patent which is for the converter *as an entirety*, including the enclosing case and the oil or non-conducting fluid, and, as the U. S. Court of Appeals found in the Carbide Case, is a claim for "*the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.*"

Now, as this Court has said in Leeds v. Victor Talking Machine Co. 213 U. S. 318, 319: "Claims are independent inventions." And also: "A combination is a union of elements, which may be partly old and partly new, or wholly old or wholly new. But, whether new or old, the combination is a means—an invention—distinct from them. They, if new," (the separate elements) "may be inventions and the proper subject of patents, or they may be covered by claims in the same patent with the combination."

To the same effect is Cantrell v. Wallick, in which this Court says, at page 694 of 117 U. S.:

> "The first defence is based on the theory that a patent cannot be valid unless it is new in all its elements as well as in the combination, if it is for a combination. But this theory cannot be maintained. If it were sound no patent for an improvement on a known contrivance or process could be valid. And yet the great majority of patents are for improvements in old and well known devices, on patented inventions. Changes in the construction of an old machine which increase its usefulness are patentable.

> Seymour v. Osborne, 11 Wall. 516. *So a new combination of known devices, whereby the effectiveness of a machine is increased,* may be the subject of a patent. Loom Co. v. Higgins, 105 U. S. 580."

It was in the case of Loom Co. v. Higgins that this Court, after laying down the general rule that a new comibnation of known elements producing a new and beneficial result is patentable, stated, with respect to the fifth claim of Webster's patent (a claim for a combination of elements and the only claim of Webster's patent in issue), at pages 591-2 of 105 U. S.:

> "It was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent."

In the case at bar, a finding of the Circuit Court in the Carbide case is that the combination which is the invention of claim 4 of the Westinghouse patent in suit "*is a distinct step forward in the progress of electrology, in the light of the immediate recognition which it received by the public.*" And the Court of Appeals in the Carbide Case found, in respect to this very combination:

> "The practical result of the invention in suit, as testified to by complainant's experts, was to so increase the capacity of converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts."

We mention these matters here, because the majority opinion in the case at bar contains the following statement, which involves at least one material error in point of fact, which is entirely out of harmony with the decisions which we have

just cited, and which utterly ignores the things found in the Carbide case:

> "The patented device covered by Claim Four, being, as we view it, a limited detailed claim and not being generally for a circulatory system throughout the heat producing parts of the transformer, and the appellee's infringing transformer embracing something of value not covered by that claim, viz: open spaces between the coils and between the coils and the core, we are of opinion that the appellant whose patent covered only part of the infringing device, is not entitled to recover all the profits made by the appellee, but only such as resulted from the patented invention."

In the first place, "open spaces between the coils" is a thing expressly contemplated by the Westinghouse patent in suit, the specification stating, at page 1, lines 65 and 66: *"Preferably also the primary and secondary coils* c^1 c^2 *are separated from each other"*; and at page 1, between lines 78 and 80: *"This material when in a liquid form circulates through the tubes and the intervening spaces of the coils and plates"*.

In the next place, as the Court of Appeals, in the Carbide case, states:

> "In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

Thus we see that it is not true or correct to say, even if claim 4 be for a combination of elements old in themselves, that therefore it is a limited detail claim, when we consider

the results achieved and the decisions of this Court to which we have referred, notably the case of Loom Co. v. Higgins. Furthermore, even if the claim were a limited detail claim, *respondent has used that limited detail claim in every one of its more than six thousand infringing transformers,* and it is precisely the combination of that claim which received at once recognition by the public, as the Circuit Court and Court of Appeals found in the Carbide case, and these findings are absolutely binding on this respondent, as the Answer expressly admits. It is only by altogether ignoring the estoppel arising on this record against this respondent and the findings of the Circuit Court and Court of Appeals in the Carbide case that the majority opinion in the case at bar can make the statements and reach the conclusions contained therein.

We therefore see that it was no departure from the invention as defined in the patent to have, in the respondent's infringing transformers, "open spaces between the coils". Furthermore, the fact that those infringing transformers also had open spaces between the coils and the core is not a departure from the invention of claim 4 as the same is defined by the United States Court of Appeals in the Carbide case; because, even with that feature in the respondent's infringing transformer, it was only an extension of the idea of the invention of claim 4 which the Court of Appeals in the Carbide case defined to be:

> "Such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

And even if the feature of having spaces "between the coils and the core" was, in fact, an additional feature in the re-

spondent's infringing transformer over and above the precise invention claimed by claim 4, nevertheless the respondent is liable for profits made on all those infringing transformers, and the burden of proof was on the respondent, *not on your petitioner,* to show what proportion of the respondent's profits were due to the fact that, in addition to having the precise combination claimed by claim 4, respondent also had spaces " between the coils and the core". (Elizabeth v. Pavement Co. 97 U. S. 141).

THE MATTERS AND THINGS FOUND AND DECREED IN SAID SUIT AGAINST UNION CARBIDE COMPANY.

From the decree and opinions of the Circuit Court and Court of Appeals in the Carbide Case, recited above for the convenience of the Court, we find that among "the matters and things *found* and *decreed* in said suit against Union Carbide Company," by which respondent admits that it is bound (see Paragraph VIII of Answer, Record 12 and 13), are the following:

(1) That the letters patent in suit are good and valid.

(2) That George Westinghouse, Jr. was the inventor of the invention claimed by claim 4 of said letters patent.

(3) That the defendant in that case, which had *used* transformers precisely like the one illustrated at page 168 of this record, which were made and sold to it by Wagner Electric Mfg. Co. (this respondent), had infringed claim 4 of said patent.

(4) That by reason of this invention "by the arrangement of various known elements, to wit, dividing the iron into sections and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils

may be carried on, aided by oil as an insulating material, and adding an inclosing case, a new combination, producing a new and beneficial result, not before attained, is" (was) "contributed to the art", by Mr. Westinghouse.

(5) That said "invention of Mr. Westinghouse, consisting of a combination of elements, is" (was) "a distinctive step forward in the progress of electrology, *in the light of the immediate recognition which it received by the public.*" (Italics ours.)

(6) That "the proofs show that the maximum of large-size, dry transformers—transformers without sectional openings in the core and without the use of oil as an insulating material—is 10 kilowatts, or 13 to 14 horse power, while that of the large-size transformers of the Westinghouse patent in suit is 500 kilowatts, or from 650 to 700 horse power," all this being due to the invention claimed by claim 4 of the patent in suit.

(7) That in none of the devices of the prior art "*is found the combination of elements contained in the Westinghouse patent in suit*" and claimed by claim 4 thereof.

(The above are among the essential things *found* and *decreed* by the Circuit Court in the Carbide Case. The following are among the things *found* by the U. S. Court of Appeals for Second Circuit in the Carbide Case, confirming the things *found* and *decreed* by the Circuit Court in that case.)

(8) That "the claim here in suit (claim 4) was filed with the original application, and it was never cancelled or modified."

(9) That said claim 4 is for a new and most useful invention.

(10) "This claim covers such an inclosing case as will confine the non-conducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air tight, closed converter."

(11) "It embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose."

(12) "In these circumstances the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

(13) "The parctical result of the invention in suit" * * * "was to so increase the capacity of the converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts."

These things, found and decreed in the Carbide Case, must then be taken as established, incontrovertible facts in the case at bar, not only in legal effect, but also by virtue of the express admissions in Paragraphs VI and VII of the Answer, and in Paragraph VIII of the Answer, which reads as follows:

> "This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union

> Carbide Company was defended by this defendant and was argued by its counsel, and that the matters and things found and decreed in said suit against the Union Carbide Company are res adjudicatae against this defendant."

Therefore, this respondent was forever estopped from denying the truth of any of these "*matters and things found and decreed in said suit against Union Carbide Company,*" and cannot be relieved of this estoppel at any stage of this case.

A judgment or a decree is a finality as to the claim or demand in controversy, concluding parties and *those in privity with them,* not only as to every matter which was offered and received to sustain or defeat the claim or demand, but as to any other admissible matter which might have been offered for that purpose. Cromwell v. County of Sac, 94 U. S. 351. See also, Southern Pacific Railroad Co. v. United States, 168 U. S. 1.

Following this doctrine, in the case of David Bradley Mfg. Co. v. Eagle Mfg. Co., the Circuit Court of Appeals for the 7th Circuit says, in 57 Fed., page 991, as follows:

> "We are compelled, therefore, to the conviction that this suit falls within the first resolution in Cromwell v. County of Sac, namely, that it is a second action upon the same claim or demand, to-wit, upon the claim for a monopoly granted by patent; and that the former decree, the question being necessarily involved and at issue in that cause, determines conclusively and for all time, as between the parties thereto *and their privies,* the validity of the patent. It can no more be made the subject of contention between them."

Also, as this respondent admits by its Answer (Paragraph IX, Record 13), that "*it has, since the 12th day of July, 1887, and subsequently to the assignment to the complainant,*

within the Eastern District of Missouri and elsewhere throughout the United States, made and sold devices or apparatus which embody the invention or discovery claimed in claim 4 of said letters patent," there was no contest in this case as to those infringing transformers and the decree was accordingly entered as to them.

The contests in the Circuit Court, prior to the interlocutory decree, resulting in an opinion by Judge Amidon on contempt proceedings and by Judge Adams at final hearing in the Circuit Court, all related to another and later transformer, known in this record as "Type M Transformer" which was not involved on the accounting and with which we are not at all concerned on this petition for certiorari.

But in view of the estoppel arising on this record, by virtue of the decree and decisions in the Carbide Case and the admissions in the Answer, the majority of the Court of Appeals, on the accounting feature of this case, was precluded from holding that the invention the subject-matter of claim 4 was not a most valuable and useful invention, and was bound by the finding of the Court of Appeals in the Carbide Case, that by virtue of claim 4 the Westinghouse patent in suit was for "*the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.*"

Therefore, in so far as the majority of the Court of Appeals in the case at bar states in its opinion that the invention of claim 4 is not "for a circulatory system throughout the heat-producing parts of the transformer," and so far as that finding may have influenced its conclusion resulting in set-

ting aside the Master's report, that finding was unlawfully made by the majority of the Court of Appeals, being directly contrary to a matter which had been prejudged and settled by the decision of the U. S Court of Appeals of the Second Circuit in the Union Carbide case, and being one of the things found by the Court of Appeals in the Carbide Case, by which this respondent was legally and admittedly bound.

RESPONDENT'S INFRINGING TRANSFORMERS ACCOUNTED FOR BEFORE THE MASTER.

As a reference to Paragraph IX of the Answer will show (Record 13):

> "This defendant admits that it has been duly notified of the grant and date of said alleged letters patent and of its alleged infringement thereof" * * * "And this defendant admits that it has, since the 12th day of July, 1887, and subsequent to the assignment to the complainant, within the Eastern District of Missouri and elsewhere throughout the United States, made, used and sold devices or apparatus which embody the invention or discovery claimed in claim 4 of said letters patent."

And before any proofs were taken in this cause, on the 2nd of June, 1903, the construction of the admittedly infringing transformers, an illustration of one of which (the same as involved in the Carbide Case) is found at page 168 of the record in this case, was thus stipulated in the case. We here quote from page 19 of the record:

> "*First.* That the defendant, prior to the filing of the bill of complaint herein, did manufacture and sell electrical transformers constructed and intended to be used as shown and described in Figure 24 of an article which appeared in the issue of the 'American Electrician' for January, 1900, on page 13 thereof" (see the record in this case, page 168), "said illustration showing a trans-

former having parallel primary and secondary coils and a core composed of thin plates of soft iron, arranged in groups, said groups being separated from each other by blocks, thus providing spaces between the groups of plates; *and the coils and core being enclosed in a metal case containing a non-conducting fluid which circulates through the open spaces in the laminated core.*" (Italics ours.)

So that the construction of the admittedly infringing transformers is identically the same as the construction of the respondent's transformer in the Carbide Case, the picture of the infringing transformer referred to in the above stipulation (see Record 168) being a picture of one of the transformers made by the respondent Company and sold by it to Carbide Company.

The record also shows (Record 404-406) that the 6524 infringing transformers made and sold by respondent and accounted for before the Master were all of similar construction to those described in said stipulation, quoted from above, and to the one illustrated at page 13 of the article in "American Electrician," reproduced at page 168 of this record; and, as the stipulation expressly states, in those infringing transformers the coils and core were "*enclosed in a metal case containing a non-conducting fluid*" (oil, the proofs show) "*which circulated through the open spaces in the laminated core*" of the transformer, thus embodying, as the Answer expressly admits (Record 13), "*the invention or discovery claimed in claim 4 of said*" (Westinghouse) "*letters patent.*"

The accounting had before the Master was in respect to these admittedly infringing transformers, manufactured and sold by the respondent, your petitioner seeking to recover on that accounting the *profits* made by the respondent in the

manufacture and sale of these infringing transformers. The account was limited to six years before filing of the bill, in pursuance of Section 4921 of the Revised Statutes of the United States, as amended in 1897.

That this matter may be clearly understood, we here reproduce in full the stipulation between the parties to this suit which was used in making up the record for the U. S. Court of Appeals for the Eighth Circuit, which stipulation appears in the very first pages of the record, i. e. pages a, b and c:

"United States Circuit Court of Appeals, Eighth Circuit.

Westinghouse Electric & Manufacturing Co., Appellant,
No. 2857. vs. In Equity.
Wagner Electric Manufacturing Co., Appellee.

Stipulation.

"In order to save the printing of 'two volumes comprising the tabulations from the books of the defendant' taken before the Master and complied under his directions, which two volumes are referred to towards the close of the Master's report in this case, which Master's report was filed in the United States Circuit Court on July 9, 1907, it is stipulated and agreed between counsel for appellant and counsel for the defendant:

"That said two volumes of tabulations contain a list of more than six thousand transformers sold by the Wagner Electric Manufacturing Company, appellee, from and after June 24, 1896, up to and including November 14, 1901, being a list of transformers manufactured and sold by the Wagner Electric Manufacturing Company, appellee and defendant, *each of which transformers embodies in its construction the invention claimed by the fourth claim of the Westinghouse patent in suit No. 366,362, dated July 12, 1887, being infringing transformers manufactured and sold by the defendant,* and which are

the transformers referred to in the Master's report in this case, and concerning which transformers the Master in this case was ordered to take and state an account by the interlocutory decree entered in this cause by the Circuit Court on the 16th day of February, 1904. Said two volumes of tabulated statement of infringing transformers made and sold by the Wagner Electric Manufacturing Company from and after June 24, 1896, up to and including November 14, 1901, which it is stipulated need not be printed as part of the record of the Court of Appeals in this case, is the tabulation from the defendant's books presented and filed before the Master on September 7, 1904, and is the same tabulation, record or report thereafter referred to by Waldo H. Layman, one of defendant's witnesses, in his testimony taken in this case. And that, as said defendant's witness, Waldo H. Layman, admits in questions and answers 84 and 85 of his testimony before the Master, said tabulated report or statement covers all transformers made and sold by the Wagner Electric Manufacturing Company from and after June 24, 1896, up to and including November 14, 1901, *which transformers embody in their construction the invention claimed by claim 4 of the Westinghouse patent in suit*, No. 366,362, dated July 12, 1887.

"That said record or tabulated statement of infringing transformers in two volumes and referred to in the last part of the Master's report, is made up of a list of defendant's infringing transformers covering the period specified above that is, between June 24, 1896, and November 14, 1901, containing the factory number of the order for each transformer, name of customer, residence of customer, date of sale, number of transformers in each sale to each customer, price of each transformer, total price to customer for each sale, and net price received.

"That on the last page of said report is a tabulated statement concerning Union Carbide transformers referred to in the Master's report, which record shows that

on December 7, 1898, the Wagner Electric Manufacturing Company, appellee, sold to the Union Carbide Company of Niagara Falls, New York, as order No. 'A 2069', nine transformers, receiving for the same the sum of $15,460.00.

"That in the following schedule given by appellee's witness, Waldo H. Layman, in answer to question 135 of his testimony before the Master, the figures under the heading 'Proportion of business involved in the record of this inquiry' represent the amount received by the Wagner Electric Manufacturing Company, for the years 1896, 1897, 1898, 1899, 1900, 1901, beginning with June 24, 1896, and ending with November 14, 1901, for the infringing transformers listed in the said two books of tabulations from the books of the defendant company relating to infringing transformers manufactured and sold by Wagner Electric Manufacturing Company between June 24, 1896, and November 14, 1901:

Year	Total Volume Company's Business	Proportion of Business Involved in the Record of this Inquiry	Total Profits of the Company on all kinds of apparatus	
1896	$238,122.35	$ 65,601.82	Profit	$20,707.33
1897	226,096.46	128,244.12	Loss	21,743.38
1898	343,494.76	148,542.29	Profit	62,592.12
1899	411,337.74	235,335.78	Profit	58,382.67
1900	515,013.32	230,732.67	Loss	12,277.57
1901	580,710.10	146,815.08	Profit	40,318.90.'

"That the sum of the various amounts in the first column of the above tabulation is the $2,314,774.75 referred to by the Master at page 42 of his printed report as found in the transcript of this record; the sum of the various amounts in the second column of the above tabulation is the $955,271.76 referred to by the Master on said page of his report; and the *arithmetical* sum of the various amounts in the third column of the above

tabulation is the $182,001.02 referred to by the Master on said page of his report.

July 23rd, 1908.

BAKEWELL & CORNWALL,
Solicitors for Westinghouse Electric & Manufacturing Company, Appellant.
A. C. FOWLER,
Solicitor for Wagner Electric Manufacturing Company, Appellee."

(Italics ours.)

Notwithstanding the fact that each one of these infringing transformers embodies, as an entirety, the invention of claim 4 of the Westinghouse patent in suit; notwithstanding the fact that claim 4 is for the converter or transformer as an entirety; and notwithstanding that the Master found that your petitioner was entitled to recover from the respondent, as *profits* made by it, the sum of $132,433.25, nevertheless, in direct contravention of the decisions of this Court in strictly analogous cases, the majority of the Court found that your petitioner was *"entitled to nominal damages only on account of the infringing device."* From this conclusion of the majority of the Court of Appeals, however, Sanborn, Circuit Judge, dissents, for the reasons stated in his opinion.

As we understand it, the essential ground upon which the majority of the Court based its conclusions is stated in the last paragraph but one of the majority opinion, and is in these words:

> "Here the appellant failed to prove by reliable or tangible evidence that the entire value of the infringing transformer as a marketable article was properly and legally attributable to appellant's patented combination embodied therein, and so, in the light of the decisions above cited, and many others, which we have examined,"

(not one of which has any application to the facts in the case at bar) "announcing the same rule, we think that the appellant is entitled to recover nominal damages only; in other words, that as part only of the profits made by the appellee are attributable to the appellant's combination, the balance being attributable to the presence in the infringing device of elements not included in that combination, and as the appellant failed to make proof of how much of the total profits was due to the presence of its combination in the infringing device, there is nothing upon which more than a nominal recovery could be grounded."

To reach this conclusion, the majority of the Court completely disregarded the findings of fact contained in the Master's report (Rec. pp. 374 and 377), to which we respectfully refer this Court.

When the majority opinion refers *"to the presence in the infringing device of elements not included in that combination"* it means to say that each of said infringing transformers had present in it not only the combination, as an entirety, of claim 4 of the Westinghouse patent, but that each of said transformers also had a feature not specifically claimed in the patent, *i. e.*: open spaces between the coils and the core. This feature, if present in the respondent's infringing transformer, was no departure from the invention of claim 4 which the Court of Appeals in the Carbide case, defined, as: *"the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."* This feature, even if present in the respondent's transformers, *was not a patented feature,* and,

as we have said, was quite within the spirit of the invention claimed by the fourth claim of the Westinghouse patent, being, at most, merely an additional separation of parts for the circulation of oil through the core. The majority opinion does not even pretend to say that these infringing transformers accounted for before the Master were not infringements of claim 4, but does in fact say, that because they not only embody the invention of claim 4 but also had additional spaces for the oil to circulate between the parts, and because your petitioner *"failed to make proof of how much of the total profits" made by the respondent was due to that feature,* which feature was in direct harmony with the invention of Mr. Westinghouse, *ergo,* your petitioner is entitled to recover nothing but nominal damages. This involves a *non sequitur,* and is also directly contrary to the rule laid down by this Court in Elizabeth v. Pavement Co., 97 U. S. 141.

It would have been impossible to have shown what proportion of the respondent's profits were due to the fact that the respondent's infringing transformers, in addition to embodying the invention of claim 4, also had, in harmony with that invention, spaces between the coils and the core, thus providing additional separation of the parts for the circulation of the oil; but, as a matter of law, this Court has decided, in Elizabeth v. Pavement Co., 97 U. S. 141, that where the defendant has used the complainant's invention as an entirety plus some additional feature, the complainant is entitled to recover all the profits made by the defendant, *unless the defendant itself show what proportion of the profits made by the defendant in the sale of the infringing structures were due to this additional feature.* In other words, this Court in Elizabeth v. Pavement Company has decided that the burden of proof, under such circumstances,

is thrown on the defendant and not on the complainant, to show what proportion of the profits made by the defendant were due to such additional feature.

The majority opinion also ignores the estoppel arising on this record, pleaded by the Bill and admitted in Paragraph VIII of the Answer, to the effect "*that the matters and things found and decreed in said suit against the Union Carbide Company are res adjudicatae against this defendant.*" It was in that very case against this respondent's vendee, defended by this respondent, that the Circuit Court and Court of Appeals for the Second Circuit held that the particular transformer illustrated at page 168 of the record, which illustrates the construction of all the infringing transformers accounted for before the Master, infringed claim 4, and it was in that case that the Circuit Court and Court of Appeals for the Second Circuit found and decreed those specific things to which we have already called attention in this petition and which are the things which Paragraph VIII of the Answer in this case admits that the respondent is bound by. Those things having been found and decreed, and the defendant being admittedly bound by them, and the scope of the invention of petitioner's patent having been defined in the Carbide case, your petitioner was only concerned in proving before the Master the number of infringing transformers and such data as would enable the Master, under the peculiar circumstances developed on the record in this case, to estimate the profits which the defendant made on its infringing transformers within six years prior to the filing of the bill of complaint. The petitioner having done this, it was the duty of the respondent, if the respondent could show such a state of affairs, to show exactly what proportion of the respondent's profits were due to the fact that in making up its infringing transformers so as to embody in

each of them the invention of claim 4, the respondent so made those transformers, in harmony with the spirit of the invention as defined by the Court of Appeals in the Carbide case, so that there would be even more space for the oil to circulate in and between the parts of the converter, to this end making spaces between the coils and the core. Not only did the respondent fail to produce any such proof, but, on the contrary, as pointed out by the Master's report, it had so confused its profits on the transformers with the general profits of its business that it could not tell the Master what profits it had actually made in the manufacture and sale of the infringing transformers accounted for.

In this case the invention of claim 4, as the Circuit Court and Court of Appeals found in the Carbide case, as the patent itself shows, and as the Master found (Record 375), is a complete thing, consisting of a certain combination of elements, being a new transformer, complete in itself. The defendant used it as such—the whole of it, as the Answer admits and as the decrees in the case found. If the defendant superadded the additional feature, not specifically claimed in the patent but quite in harmony with the invention, of having spaces between the coils and the core, the defendant failed to show that such addition contributed to the profits realized. The burden of proof was on the defendant, not on your petitioner, to do this, contrary to the majority opinion of the Court of Appeals in this case. This precise question was decided in the case of Elizabeth v. Pavement Co., where this Court held:

> "The Nicholson pavement was a complete thing, consisting of a certain combination of elements. The defendant used it as such—the whole of it. If they superadded the addition made to it by Brocklebank & Trainer, *they failed to show that such addition contributed to*

the profits realized. The burden of proof was on them to do this." See Elizabeth v. Pavement Co., 97 U. S. 141.

To the same effect see Hurlbut v. Schillinger, 130 U. S. 456, 472; Crosby Valve Co. v. Safety Valve Co., 141 U. S. 454; Root v. Railway Co. 105 U. S. 203.

Not only is the majority opinion in the case at bar in direct conflict with the decisions of this tribunal in the case of Elizabeth v. Pavement Company and the other cases just cited, but it is in direct conflict with the rule applied by the U. S. Circuit Court of Appeals for the Sixth Circuit in Brennan Co. v. Dowagiac Mfg. Co. 162 Fed. 475, and by the U. S. Circuit Court of Appeals for the Seventh Circuit in Orr & Lockett Hardware Co. v. Murray, 163 Fed. 55, where that court, following and referring to Elizabeth v. Pavement Co., 97 U. S. 126, says:

> "Where profits are made by an infringer, by the use of an article patented as an entirety, the infringer is responsible to the patentee for the whole of such profits, unless he can show—*and the burden is on the infringer to show it*,—that a portion of such profits is the result of some other thing used by him."

Thus it is clear that when the majority of the Court decided, as it did decide, that because in respondent's more than six thousand infringing transformers accounted for there were present, in addition to the invention of claim 4 as an entirety, spaces between the coils and the core through which the oil could also circulate, the burden of proof was on your petitioner to show what proportion of the profits made by the respondent was due to that feature, *its decision was in conflict with the decision of this Court, in Elizabeth v. Pavement Co., 97 U. S. 141, and with the other decisions of this Court, herein cited; and it also undertook to establish a rule in the Eighth Circuit directly in con-*

flict with the rule established in the Sixth and Seventh Circuits.

We respectfully submit that it is for the very purpose of obtaining uniformity of decisions in the various circuits, to harmonize with the decisions of this Court, that this tribunal exercises its prerogative in issuing the writ of certiorari to review decisions of lower tribunals, in cases such as this, where a U. S. Court of Appeals has neglected, or refused, to follow when this Court has construed and defined the law.

UNDER THE DECISIONS OF THIS COURT, WHERE THE INFRINGER HAS CONFUSED THE PROFITS MADE IN THE MANUFACTURE AND SALE OF THE INFRINGING ARTICLE WITH THE GENERAL PROFITS OF HIS BUSINESS, THE MASTER IS WARRANTED IN ESTIMATING THE PROFITS TO WHICH COMPLAINANT IS ENTITLED. AND IN ESTIMATING PROFITS MADE BY AN INFRINGER A COMPENSATION IS GRANTED "COMPUTED AND MEASURED BY THE SAME RULES THAT COURTS OF EQUITY APPLY TO THE CASE OF A TRUSTEE WHO HAS WRONGFULLY USED THE TRUST PROPERTY FOR HIS OWN ADVANTAGE."

Tilghman v. Proctor, 125 U. S. 148.

Root v. Railway Co., 105 U. S. 189, 214, 215.

Central Natl. Bank v. Connecticut Mut. Life Ins. Co. 104 U. S. 54.

The Idaho, 93 U. S. 575.

Rubber Co. v. Goodyear, 9 Wall. 802, 803, 804.

Callaghan v. Myers, 128 U. S. 617.

Manufacturing Co. v. Cowing, 105 U. S. 255.

Between the matters and things found and decreed in the Carbide case and the matters and things found on the record in this case it was established:

That the invention of claim 4 of the patent in suit was a new and very useful invention; nothing preceding it in the art accomplished what this invention accomplished; that within the period covered by the accounting the respondent had made and sold more than six thousand transformers, each and every one of which embodied, as an entirety, the invention of claim 4, thus recognizing, as the Courts found in the Carbide case, that the public had theretofore recognized, the great merit of this invention. The respondent profited by the manufacture and sale of these infringing transformers, but confused its profits in this branch with the general profits of its business. The Master, who had the advantage of hearing the testimony of the witnesses, noticing their behavior on the stand, etc., found, among other things (Record 374-377):

(1) That the entire commercial value of the infringing transformers so manufactured and sold by the respondent during the time covered by the accounting was due to the invention claimed by claim 4 of the patent in suit.

(2) That the respondent had merged the profits made by it on the infringing transformers with the profits of the respondent's entire business, so that, as shown by the testimony, the respondent was unable to separate such profits.

(3) That respondent claimed that it did not know and could not furnish the cost of manufacturing the infringing transformers nor even an estimate thereof.

(4) That the business of the respondent as to the manufacture of the infringing transformers was so intermingled

with its other and general business that approximate results only were possible, in estimating the profits.

(5) That the profits of the respondent from the manufacture of its infringing transformers, as nearly as it could be reached by estimates, comparisons and apportionment, was approximately 25% on the net amount of sales on the infringing transformers.

Under these circumstances, and under the decisions of this Court above cited, notably the case of Manufacturing Co. v. Cowing, 105 U. S. 257, 258, applying the rules that Courts of equity apply to cases of a trustee who has wrongfully used the trust property and commingled the profits made with the general profits, and under the doctrine laid down in Tilghman v. Proctor, 125 U. S. 148, the Master estimated the profits and found that your petitioner was entitled to recover from the respondent $132,433.35.

The majority opinion says in regard to this matter:

> "The master found that the appellee kept no separate account of its profits realized from its infringing device, but on the contrary, that the profits made by appellee on the infringing transformers were merged with the profits of its entire business, so that it was impossible to separate them and that the appellee did not know and could not furnish the cost of the manufacture of the infringing transformers or even an estimate thereof. We do not think the mere failure to keep separate the profits derived from the infringing device under the circumstances disclosed by the record, warrants the application of the equity rule, that where one wrongfully mingles his goods with those of another so that they are indistinguishable from the mass, the party injured is entitled to take the whole. This rule has been applied in cases of the invasion of a copyright where the wrongdoer has mingled in the book, matter to which a copyright does not properly

> extend with matter covered by the copyright, 'the two necessarily going together, when the volume is sold as a unit, and it being impossible to separate the profits on the one from the profits on the other and the lawful matter being useless without the unlawful.' Callaghan v. Myers, 128 U. S. 617."

In the first place, we wish to say that the rule of Callaghan v. Myers, although applied in a copyright case, is a rule which this Court has repeatedly recognized, approved and applied in patent cases, the equitable principle being the same whether the profits to be accounted for relate to a copyright or to a patent, (see Hurlbut v. Schillinger 130 U. S., page 472).

Furthermore, it appears from the record that the Master was warranted in his findings above referred to and in estimating the profits under the circumstances of this case. When your petitioner began to take its proofs before the Master the first witness called was Waldo A. Layman, General Manager and Treasurer of the respondent company, from whom with great difficulty, as the record shows, your petitioner at last succeeded in obtaining the statement found at page 442 of the record and hereinbefore quoted, which shows in the third column under the heading, "*Proportion of business involved in the record of this inquiry*," the gross sales of the respondent's business in the infringing transformers during the years 1896 up to and including 1901, this statement being also further explained by the stipulation found at pages a, b and c of the record in this case. This statement also shows the total profits of the respondent's business in the years 1896, 1898, 1899 and 1901. Layman tells the Court (Record 442) that he was not able to give the data from which could be ascertained the cost of manufacture of the infringing transformers, although he did provide a list,

referred to in the stipulation found at pages a, b and c, of all the infringing transformers sold during that time and the price at which each of those transformers was sold. At page 439 of the record Layman was asked whether he was in a position to ascertain from the books of the respondent company, from which this transcript or list of infringing transformers had been made up, *"or otherwise,"* the cost of manufacturing the 6524 transformers covered by that list. His answer to Q. 113 (found at page 439 of the record) was that he could only determine that by reference to the books of the company. After an adjournment, and on October 17, 1904, when the witness was again called before the Master, in answer to inquiries found at page 442 of the record, he stated that he wished to be understood as stating that he had examined the books of the company and the information as to the cost of manufacturing these infringing transformers inquired about at the previous session could not be ascertained; that all he could give was the total volume of the business as specified in the tabulated statement found at page 442 of the record and also reproduced in connection with the stipulation found at page b of the record. It must here be observed that the same witness had antecedently been asked (at page 439 of the record) whether he could ascertain from the books of the respondent company "*or otherwise*" the cost of manufacturing the said transformers, and that his reply was (Record 439, Q. 113) that he could only determine this by reference to the books of the company.

Your petitioner and the Master were then driven to other means of trying to ascertain what the facts were, and the testimony of Johannesen and Foster was taken, Johannesen's testimony beginning at page 446 and Foster's beginning at page 481.

Johannesen and Foster had formerly been in the employ of the respondent including the time covered by the accounting, and both proved by their testimony that during that time and all the time they were in the employ of the respondent most accurate estimates were made and kept by them for respondent as to the details of cost of these transformers, even to the cost of boxing and transporting the same, all of which is illustrated by the sample blue print exhibit found opposite page 726 of the record, referred to by them; and this notwithstanding the fact that the witness Layman, the Treasurer and General Manager of the respondent, stated most positively that no such information could be had from the books of the respondent company *"or otherwise."*

Afterwards, when Layman was called as a witness on behalf of the respondent, he shows that some records which would have been of material assistance in this inquiry as to the exact profits made by the defendant had been destroyed, about six years prior to the time when he gave his testimony (November, 1905), which would correspond almost exactly with the date of the decision of the Court of Appeals of the Second Circuit in the Carbide case (Record, pp. 652-653). Then, he says (p. 615) that it was the practice of the respondent to make at least one inventory a year. At the foot of page 615 and at page 616 of the record, in answer to inquiries, Layman stated that those inventories "ought to be in the vaults of the company." It must be noticed that that inquiry was then being conducted by the respondent's counsel, who, after the witness had said, at the top of page 616, in answer to Q. 232, that he thought those inventories were available, or at least that they ought to be in the vaults of the company, stated: *"I will say to the Master that on this matter of inventories I shall drop the matter for the present, because I have not examined them and do*

not know anything about them." The Master then replied on the record: "*I see of course that will be necessary.*"

However, although those inventories were evidently in the possession of the respondent and accessible to the witness, the subject was dropped there by the respondent's counsel, and the inventories were never produced.

It was under these circumstances and with these difficulties that the Master was compelled to resort to estimates of respondent's profits; and it may be noted here that the Master expressly finds in his findings of fact, at pages 376 and 377 of the record:

> "That the defendants admitted in the evidence of the witness, Layman, p. 334" (the Master here refers to the typewritten pages of the testimony then before him, and the reference now should be Record 615 and 616) "that it had in its vaults inventories made annually or semi-annually, referred to in the testimony of Johannesen, *and omitted to produce the same in evidence.*"

In view of this record and the findings of the Master we are at a loss to understand how the majority opinion contains this statement:

> "We do not think the mere failure to keep separate the profits derived from the infringing device, under the circumstances disclosed by the record, warrants the application of the equity rule, that where one wrongfully mingles his goods with those of another so that they are indistinguishable from the mass, the party injured is entitled to take the whole."

This is in marked contrast to the unanimous decision of the U. S. Court of Appeals for the Sixth Circuit in the case of Dowagiac Mfg. Co. v. Superior Drill Co., 162 Fed. 479, 481, where the rule laid down by this Court in Rubber Co. v. Goodyear, 9 Wall. 802, 803, 804, Callaghan v. Myers, 128

U. S. 617, and other similar cases, is applied, the U. S. Court of Appeals for the Sixth Circuit in that case holding, in conformity with the decisions of this Court, that where the infringement was deliberate and intentional the defendant cannot avoid liability for profits by so confusing the profits made on the infringing business with the profits made on its general business that the profits made on the infringing articles could not be separated from the profits on its entire business.

It must also be remembered that the Answer in the case at bar (Record 13) expressly admits that respondent had been notified of your petitioner's letters patent and of the infringement, and that nevertheless it had infringed by making, using and selling devices or apparatus embodying the invention or discovery claimed by claim 4 of the letters patent in suit.

Under the evidence before the Master and the findings of the Master and the decisions of this court in the cases hereinbefore cited, the Master was clearly warranted, under the circumstances detailed above, in estimating the respondent's profits on the data furnished him by the witnesses Johannesen and Foster, in view of the attitude taken by the respondent's Treasurer and General Manager, Mr. Layman; and, therefore, we are not able to understand the following sentence in the opinion of the majority of the Court of Appeals, in view of the record in this case:

> "There is no evidence tending to show that the appellant's failure to show how much of the appellee's profit resulted from the infringed combination and how much from the presence of the other elements of the infringing transformer, *was due to any refractory or deceitful conduct on the part of the appellee, such as destruction or hiding of the books, or refusal to produce them for the use of the appellant.*" (Italics ours.)

We have already shown, under the decisions of this Court, that even if the infringing transformers did have open spaces between the coils and the core, in addition to having the precise combination called for by claim 4 of the patent in suit, *the burden of proof was on the respondent* and not on your petitioner to show what proportion of the profits made by the respondent was due to this difference. See Elizabeth v. Pavement Co., 97 U. S. 141. But the trouble was that the deceitful and refractory conduct on the part of the witness Layman and the whole attitude of the respondent on this accounting, as the record shows and as the Master found, proved clearly that the respondent sought to prevent *all the facts* as to the profits made by the respondent on these infringing transformers being adduced before the Master; and that Layman stated most positively that the profits made by the respondent on the infringing transformers could not be separated from the profits made in its general business. Therefore, under such circumstances, the Master was left to estimate the profits on the data before him.

THE MAJORITY OF THE COURT OF APPEALS DID NOT ATTACH SUFFICIENT WEIGHT TO THE FINDINGS OF THE MASTER, AND FAILS UTTERLY TO SHOW THAT THE FINDINGS OF FACT MADE BY THE MASTER, AS WELL AS HIS CONCLUSIONS OF LAW, ARE ERRONEOUS.

This of itself is in direct conflict with leading decisions of this Court. In the case of Warren v. Keep, 155 U. S. 265, this Court affirmed the decision in Keep v. Fuller, reported in 42 Fed. 897, in which case Judge Coxe, Circuit Judge, said:

> "It is wise to remember at the outset that the Court is not now to decide *de novo* the various questions pre-

sented on the accounting. The present investigation is confined simply to the question—Did the Master make any mistake which requires the setting aside of his report? He stands as the representative of the Court, and is better able by far, than one who only reads the testimony from a printed book, to tell what witnesses are entitled to credit, and where the truth lies in the controversy before him. His findings are *prima facie* correct, and the burden of showing error is upon the party who excepts. If the proof is sufficient to sustain the Master's findings it is enough. The investigation terminates at this point, even though the Court, sitting in the Master's place, might, upon similar evidence, reach a different result. 'The conclusions of the Master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part.' Tilghman v. Proctor, 125 U. S. 136, 149, 8 Sup. Ct. Rep. 894; Callaghan v. Myers, 128 U. S. 617, 666, 9 Sup. Ct. Rep. 177; Kimberly v. Arms, 129 U. S. 512, 525, 9 Sup. Ct. Rep. 355; Central T. Co. v. Texas R. Co., 32 Fed. Rep. 448; Welling v. La Bau, 34 Fed. Rep. 41, and cases cited. Tested by the rule of these cases, it cannot be said that the Master's findings of fact are erroneous, except, perhaps, in a few particulars which will be referred to hereafter."

A Master appointed to take an accounting is a judicial officer, representing the Court in this work, and his findings are and should be entitled to the greatest weight; they are not to be lightly set aside and will not be set aside except in the case of a very clear mistake. In regard to any doubtful matters the presumption will be in favor of the Master's report. The courts recognize that the findings of a Master are entitled to even greater weight than the findings of a jury. In the case at bar, the Special Master appointed by the Court is not only a lawyer, but a man of very extensive experience

as a Master in Chancery in considering and weighing evidence; and he has had an advantage which the Court cannot have, for he has seen the witnesses and had an opportunity of observing their appearance, attitude and manner on the stand, of hearing their testimony and of interrogating each witness himself.

As to the weight which should be given to the Master's report in such a case as this, this Court says in Tilghman v. Proctor, 125 U. S. 149-150:

> "We are then brought to a consideration of the exceptions taken to the Master's report in matters of fact, affecting the accuracy of his conclusions in respect to the amount of those profits, gains and savings. In dealing with these exceptions, the conclusions of the Master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part. Medsker v. Bonebrake, 108 U. S. 66; Donnell v. Columbian Ins. Co., 2 Sumner, 366, 371; Mason v. Crosby, 3 Woodb. & Min. 258, 269; Paddock v. Commercial Ins. Co., 104 Mass. 521, 531; Richards v. Todd, 127 Mass. 167, 172."

In Crawford v. Neal, 144 U. S. 585, this Court holds as follows:

> "The findings and conclusions of a Master upon conflicting testimony are to be taken as presumptively correct, and unless some obvious error in the application of the law has intervened, or some serious or important mistake has been made in the consideration of the evidence the decree should stand."

To the same effect is Furrer v. Ferris, 145 U. S. 132, citing Kimberly v. Arms, 129 U. S. 512.

In the case at bar the record shows that the master had abundant warrant for his findings of fact, while the decisions

of this Court support him in his conclusions of law and show that the majority opinion of the Court of Appeals for the Eighth Circuit in the case at bar is in conflict with the decisions of this Court in analogous cases.

GARRETSON V. CLARK, 111 U. S. 120.

This case, utterly inapplicable to the facts in the case at bar, is cited by the majority opinion of the Court below on the following proposition:

> "The patentee must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative."

The trouble is that that proposition, while sound, does not apply to the facts in the case at bar. In the case at bar, unlike the case of Garretson v. Clark, where the patent was for a mere feature in the mop head, the invention is for a complete combination in itself—for a wholly new thing *as an entirety*—, which combination, *as an entirety,* the defendant has used. This tribunal has repeatedly construed its decision in the case of Garretson v. Clark and held that the rule there laid down does not apply to a case like the one at bar, *where the invention in question is, as an entirety, "a complete combination in itself."*

In the case of Hurlbut v. Schillinger, at page 472 of 130 U. S., this court says:

> "In Elizabeth v. Nicholson Pavement Co., 97 U. S. 126, 139, it is said that 'when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy.' This language was quoted with approval in Root v. Railway Co., 105 U. S. 189, 203. As in the case of the Nicholson patent, so in the case of

the Schillinger patent, the pavement was a complete combination in itself, differing from every other pavement, and the profit made by the defendant was a single profit derived from the construmtion of the pavement as an entirety. Callaghan v. Myers, 128 U. S. 617, 665, 666.

Within the decision in Garretson v. Clark, 111 U. S. 120, the proof in this case is satisfactory, that the entire value of the defendant's pavement, as a marketable article, was properly and legally attributable to the invention of Schillinger.

The decree of the Circuit Court is affirmed."

So, in the case of Crosby Valve Co. v. Safety Valve Co., *where the claim was on the improved valve as an entirety*, and where the defendant had used that valve plus some features which he claimed as improvements, this Court says, at page 453 of 141 U. S.:

> "In regard to the holding by the master and the court that all the profits of the defendant from the valves it made and sold were to be attributed to the employment by it of the improvement covered by the patent of 1866, we hold that, in view of what was determined in the former opinion of this court, and on the whole case, the safety-valves known to the art and open to be used by the defendant would not do the same work as the Richardson invention covered by the patent of 1866, or have any commercial value; and that, within the case of Garretson v. Clark, 111 U. S. 120, it appears, by reliable and satisfactory evidence, that the profits made by the defendant are to be calculated in reference to the entire valve made and sold by it, for the reason that the entire value of that valve, as a marketable article, is properly and legally attributable to the patented feature of the patent of 1866."

Thus this Court by its own decisions has distinguished cases like the one at bar from cases such as Garretson v. Clark.

In the case at bar, however, as had been antecedently found by the U. S. Circuit Court and Court of Appeals for the Second Circuit in the Carbide case, the invention the subject-matter of claim 4 was for a new converter, which accomplished marvelously improved results and results which had never been accomplished by anything in the prior art.

Furthermore, the Master in this case expressly found (Rec., 375), in harmony with the things found and decreed in the Carbide case, that the invention of claim 4 constituted an entirely new transformer, complete in itself; that this entirely new transformer, complete in itself, was infringed, in its entirety, by the respondent, in all of its infringing transformers; and that the entire commercial value of the infringing transformers so manufactured and sold by the respondent, at and during the time covered by the accounting, was due to this invention.

In the case of Seymour v. McCormick, 16 Howard 480, a rule similar to that laid down in Garretson v. Clark, 111 U. S. 120, was stated, because in the case of Seymour v. McCormick the patent was only on the driver's seat of the mowing machine, while the Master had allowed profits on the entire mowing machine including the driver's seat.

In the case at bar, however, as in the case of Hurlbut v. Schillinger, 130 U. S. 471, 472, Elizabeth v. Pavement Co., 97 U. S. 126, and Crosby Valve Co. v. Safety Valve Co., 141 U. S. 453, the invention in question is for an improved structure *as an entirety* or unit and the defendant had used *that entirety* or unit, and therefore the complainant was entitled to recover all the profits which the defendant had made by using this invention as an entirety, or what might be reasonably estimated as the profits made by the defendant.

In the case at bar, Judge Sanborn, Circuit Judge, in his dissenting opinion recognizes this very distinction and that the rule laid down by this Court in Garretson v. Clark, Seymour v. McCormick, and similar cases has no application to the case at bar; but that on the contrary the rule laid down by this Court in Crosby Valve Co. v. Safety Valve Co., 141 U. S. 448-449-454, and Hurlbut v. Schillinger, 130 U. S. 456, and similar cases, is applicable.

The Westinghouse invention was a remarkable achievement. The progress of the electric art was seriously impeded by the failure of the converter to keep up with the development in size and capacity of the generator on one side and that of the motor on the other. The capacity of generators and motors had reached into hundreds of kilowatts, but the maximum capacity of commercial converters was 10 kilowatts. This limitation was the result of a natural law which seemed to interpose an insurmountable barrier to further advance. It is well stated in the opinion of the Court of Appeals in the Union Carbide case (117 F. R. 498), as follows:

> "But when the art began to call for converters exceeding 10 kilowatts in capacity, it was found, as stated by the expert for complainant, 'that the capacity of the transformer increased as the cube of the linear dimensions, and the heat, if the amount of loss was held stationary, would increase in like proportion, while the radiating surface would increase only as the square of the linear dimensions.'"

The effect of the heat thus produced was to burn out the insulation between the coils in interior of the core and short circuit the coils, thereby destroying the converter: while a prolonged high temperature, although not sufficient to burn the insulation, would gradually impair it and produce ageing of the iron core and thereby reduce the efficiency of the converter and materially shorten its life.

Prior attempts to solve the problem had been directed to the prevention of the generation of heat, but Mr. Westinghouse recognizing that this was inevitable in the use of large converters with heavy currents, turned his face the other way and sought for means by which the heat developed, whatever its amount, would be dissipated without injury to the converter. This he did by constructing the converter with open spaces in or inside the massive iron core and inclosing the converter so constructed in a tight metallic case filled with oil, whereby the oil obtained access to the coils and inner surfaces of the core, so that upon the development of heat the convection currents set up in the oil by a natural law should extract the heat from the heated inner surfaces and convey it to the external case which was of sufficient capacity to radiate it to the atmosphere.

The result of the invention was to increase the capacity of commercial converters from 10 kilowatts up to 500 kilowatts. It was therefore an invention of high grade, an absolutely new combination, performing a new function, making a distinct advance in the art, and was useful only in its entirety. It belonged to the same class as the inventions in Loom Co. v. Higgins, Elizabeth v. Pavement Co., Hurlbut v. Schillinger and Crosby Valve Co. v. Safety Valve Co., and not to that of the invention in Garretson v. Clark, and is entitled to the broad rules governing the construction of claims and determination of damages in cases relating to inventions of its class.

That the rule laid down by this Court in Garretson v. Clark, 111 U. S. 120, does not apply in a case like the one at bar, or in cases like Elizabeth v. Pavement Co., 97 U. S. 126, Hurlbut v. Schillinger, 130 U. S. 471, 472, Crosby Valve Co. v. Valve Co., 141 U. S. 453, *where the invention claimed*

is for a combination as a unit or as an entirety, in which the parts co-operate, thus producing a new or improved result, resulting in an ideal, patentable combination within the meaning of this Court's decisions in Cantrell v. Wallick, 117 U. S. 694, 695, and Leeds & Catlin v. Victor Talking Machine Co., 213 U. S. 319, is also the rule recognized and applied by U. S. Courts of Appeals in other circuits, appears from the following cases:

In Yesbera v. Hardesty Mfg. Co., 166 Fed. 124, which in its facts is similar to the case at bar, the Court of Appeals for the Sixth Circuit, after referring to the case of Garretson v. Clark, 111 U. S. 120, says:

> *"The unanimity with which infringers seek the shelter of that case is something remarkable,"*

and then, following the rule laid down by this Court in Hurlbut v. Schillinger, 130 U. S. 471 and the other cases above cited, decides:

> "The rule that, where a patent is for an improvement, to authorize the recovery of profits from an infringer, the owner must separate or apportion the profits made by defendant between the patented feature and the unpatented feature, *does not apply to a patent for a combination as a unit in which the parts co-operate.*" (Italics ours.)

So, also, in the Third Circuit, in Brookfield v. Novelty Glass Co., the Circuit Court holds (170 Fed. 830):

> "Where the claim of a patent infringed is for a combination of old elements, *the invention consisting in the combination*, the infringer is liable for all the profits made by the use of the combination."

So, in the case of Brennan Co. v. Dowagiac Mfg. Co., 162 Fed. 472, the U. S. Court of Appeals for the Sixth Circuit

holds that where the invention is for a combination of elements, to accomplish an improved result, in which each element, whether new or old, is an essential part of the invention, the infringer who has appropriated the combination as a whole (the exact facts in the case at bar) is liable for the profits made on the entire machine.

To the same effect is the decision of the U. S. Circuit Court of Appeals for the Seventh Circuit in Orr & Locket Co. v. Murray, 163 Fed. 54.

To the same effect is the decision of the U. S. Court of Appeals for the Sixth Circuit in Dowagiac Mfg. Co. v. Superior Drill Co., 162 Fed. 479.

To the same effect is the decision of the U. S. Court of Appeals in the Second Circuit in Wales v. Waterbury Co., 101 Fed. 129.

So that the application, by the majority opinion of the U. S. Court of Appeals for the Eighth Circuit in the case at bar, of the doctrine in Garretson v. Clark to facts such as exist in the case at bar is not only in conflict with the rule laid down by this Court, in earlier and later decisions, where the facts were similar to the facts in the case at bar, but is in conflict with the rule laid down by various U. S. Courts of Appeals in other circuits. Judge Sanborn's dissenting opinion states the rule applicable to the facts in the case at bar and is in harmony with the decisions of this Court in similar cases, as well as in harmony with the rule established in other circuits.

The dissenting opinion of Sanborn, Circuit Judge, in the case at bar, so far as that dissenting opinion relates to the question on the accounting, and, therefore, the question presented by this petition for certiorari, is as follows:

DISSENTING OPINION OF SANBORN, CIRCUIT JUDGE, ON THE ACCOUNTING FEATURE OF THE CASE AT BAR.

"Turning to the question of damages for the infringement by the manufacture and sale of defendant's first converter we are met by the claims that the complainant was entitled to no recovery because the defendant improved the patentee's combination by adding open spaces between the plates and the coils and no evidence was produced which separated the profits attributable to that improvement from those derived from the patented combination and because the defendant did not stand in the relation of a trustee of the profits for the patentee and owed it no duty to keep them separate or to account for them. There is some testimony in the record that the coils became more overheated than the plates and that the open spaces between the coils and the plates tend to cool the former more efficiently than the spaces between the plates. But the spaces between the plates permit the oil to circulate between the plates against and around the coils and the evidence of the superiority of the spaces between the coils and the plates fails to persuade my mind that the latter constituted any real improvement upon the mode described by the patentee. On the other hand it leads me to believe that these new spaces and this theory concerning them constituted a mere subterfuge of the defendant conceived to avoid a just liability for its infringement.

"Moreover, the measure of the complainant's damages was not the difference between the profits the defendant would have derived from the complainant's combination and those it did derive from its form of it. It was the difference between the profits which the defendant derived

from the use of the complainant's combination and those it might have derived from the use of any other combination then known and open to the public which would have produced an equally beneficial result, *Tilghman* v. *Proctor*, 125 U. S. 136, 146, and as there was no such combination or converter the alleged improvement was immaterial.

"The indisputable facts that converters that have a capacity between 10 kilowatts and 500 kilowatts were first made serviceable and merchantable by the complainant's combination and that all the converters made and sold by the defendant were of this capacity and embodied the complainant's combination lie conceded at the foundation of this case. Without the complainant's combination whereby the oil was circulated in a sealed case through the intervening spaces of the coils and plates and around the converter the defendant never could have used or sold one of its infringing transformers. In the light of these facts the master found that the entire commercial value of the infringing converters manufactured and sold by the defendant during the time concerned in the accounting was due to the complainant's combination. 'The conclusions of the master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part.' *Tilghman* v. *Proctor*, 125 U. S. 136, 150; *Medsker* v. *Bonebrake*, 108 U. S. 66. And the evidence not only fails to disclose to my mind any error or mistake in the findings of the master, but compels my assent to his conclusion.

"Is the complainant barred from the recovery of any of the profits the defendant derived from its infringement because it failed to separate those derived from its combination

from those which the defendant otherwise derived from the infringement?

"It is settled rule that 'Upon a bill in equity by the owner against infringers of a patent, the plaintiff is entitled to recover the amount of gains and profits that the defendants have made by the use of his invention. * * * * The reasons that have led to the adoption of this rule are, that it comes nearer than any other to doing complete justice between the parties; that in equity profits made by the infringer belong to the patentee and not to the infringer, and that it is inconsistent with the ordinary principles and practice of courts of chancery, either, on the one hand, to permit the wrongdoer to profit by his own wrong, or, on the other hand, to make no allowance for the cost and expense of conducting his business, or to undertake to punish him by obliging him to pay more than a fair compensation to the person wronged. The infringer is liable for actual, not for possible, gains. The profits therefore which he must account for are not those which he might reasonably have made, but those which he did make, by the use of the plaintiff's invention; or, in other words, the fruits of the advantage which he derived from the use of that invention over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally beneficial result. * * * * A court of equity which has acquired, upon some equitable ground, jurisdiction of a suit for the infringement of a patent, will not send the plaintiff to a court of law to recover damages, but will itself administer full relief by awarding, as a substitute for legal damages, a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property to his own advantage. *Root* v. *Railway Company*, 105 U. S. 189, 214, 215.' *Tilgh-*

man v. *Proctor*, 125 U. S. 136, 144, 145, 146, 148. Let us apply these rules to this case. The complainant is entitled to the fruits of the advantage which the defendant derived over what it would have had in using any other known converter then open to the public and adequate to enable it to obtain an equally beneficial result. There was no other known converter open to the pubic which could be used to produce the result obtained by complainant's combination. The complainant was consequently entitled to all the profits and all the advantages derived from the defendant's use of the infringing machine. *Crosby Steam Gauge Valve Company* v. *Consolidated Safety Valve Company*, 141 U. S. 441, 448, 449; *Manufacturing Company* v. *Cowing*, 105 U. S. 253.

"The decisions present two classes of cases each governed by its own measure of profits recoverable for an infringement. Where the patented device is a slight improvement upon an existing and operative machine which accomplished the same result without as with the patented improvement, as in *Garretson* v. *Clark*, 111 U. S. 120; where the patented improvement was a slight change in the jaw of a well known and operative mop-head, *Keystone Mfg. Co. v. Adams*, 151 U. S. 139; where the improvement patented was a revolving winged shaft attached to an old operative and successful corn-sheller to facilitate the movement of the corn into the sheller, and in *Seymour* v. *McCormick*, 16 How. 480, where the improvement was a driver's seat upon an operative and successful harvesting machine, the profits from the sale or use of the entire machine, the entire mop-head, the entire corn-sheller, or the entire harvesting machine, may not be recovered by the patentee, but his recovery is limited to the profits derived from the patented improvement to the operative machine only. And when a complainant has a patent upon improvements to a machine parts of which are patented

to others under prior grants, as in *Blake* v. *Robertson,* 94 U. S. 728, the recovery is likewise limited to the profits derived from the complainant's patented improvement separated from those derived from the improvements patented to others.

"But where the complainant's patent secures a new combination or a new machine which accomplishes a result never attained before it was invented, the entire profits derived from the infringing device are recoverable, for, since no combination or device existed before the invention by which the desired object could be attained, there is no combination or device but the inventor's to which the profits can be lawfully attributed. *Crosby Steam Valve Company* v. *Safety Valve Company,* 141 U. S., 441, 448, 449, 454; *Brennan & Company* v. *Dowagiac Mfg. Co.,* 162 Fed. 472, 475, 89 C. C. A. 392, 395; *Dowagiac Mfg. Co.* v. *Superior Drill Company,* 162 Fed. 479, 481; *Elizabeth* v. *Pavement Company,* 97 U. S. 126; *Manufacturing Company* v. *Cowing,* 105 U. S. 253; *Hurlbut* v. *Schillinger,* 130 U. S. 456; *Warren* v. *Keep,* 155 U. S. 265; *Ruggles* v. *Eddy,* 20 Fed. Cases, No. 12, 116; *Zane* v. *Peck,* 13 Fed. 475; *Fifield* v. *Whittemore,* 33 Fed. 835; *Creamer* v. *Bowers,* 35 Fed. 206; *Orr & Lockett Hdwe Co.* v. *Murray,* 163 Fed. 54, 56. I am unable to escape the conviction that the case in hand falls under the latter rule. The claim upon which this suit is founded is for a patented combination of old elements. It is not restricted to the open spaces between the plates or to the inclosing case, or to anything but the association of all the elements described and claimed. Neither the open spaces between the plates, nor the tubes, nor the plates, nor the coils, nor the oil, nor the spaces between the coils, nor any other detail of the combination is patented by this fourth claim of the patent. Any one may use without infringing this claim not only these

details, but also any one or all but one of the essential elements of the combination. The thing patented is one, single and entire. It is the combination of all the essential elements into the entire new converter which the combination produces. No one can infringe this claim of the patent who does not appropriate this entire new combination and this machine which that combination produces. And as this new combination and the converter it produces accomplished a result never attained before, a result that no known device or combination open to the public while the infringement here in controversy was continuing, would produce, this case is not governed by the rule applicable to slight improvements on old machines which accomplished the same result before as after the patented improvement illustrated by *Garretson* v. *Clark*, 111 U. S. 120, and other cases of that class, but the complainant is entitled to all the profits which the infringer derived from the appropriation of the new combination and machine. *Brennan & Company* v. *Dowagiac Mfg. Company*, 162 Fed. 472, 475; *Yesbera* v. *Hardesty Mfg. Co.*, 166 Fed. 120, 125, and cases of that class cited above.

"It appears to me therefore that the complainant was the owner of all the profits which the defendant derived from the manufacture and sale of the infringing converter and that the defendant was in equity a trustee of those profits for the complainant. The Supreme Court declares that it is the established rule of the nation that in a case of this nature a court of equity will administer full relief by awarding 'a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property to his own advantage.' *Tilghman* v. *Proctor*, 125 U. S. 136, 148. What is that rule? Chancellor Kent stated it in *Hart* v. *Ten Eyck*, 2 Johnson's Chancery Reports (N. Y.) 62, 108, in these words: 'The

rule of law and equity is strict and severe on such occasions. If a party having charge of the property of others, so confuse it with his own, that the line of distinction cannot be traced, all the inconvenience of the confusion is thrown upon the party who produces it, and it is for him to distinguish his own property or lose it.' The Supreme Court approved this statement of the rule in 'The Idaho,' 93 U. S. 575, 576.

"The primary duty of a trustee is to keep the property of his cestui que trust separate from his own, to keep an account of it and to deliver it to the cestui que trust. This infringer kept no account of these profits but mingled them with the profits of its general business so that it was impossible for it or for any one to accurately separate them. But the record contains persuasive evidence of the entire amount which the defendant received from the sale of the infringing converters and that it customarily added to the cost of manufacture and sale a profit of 25% to make up its selling price. There is also persuasive evidence of the total amount received by the defendant from all its business during its infringing years and of the total profits derived from its business during these years. These are ample facts upon which to base a just and equitable finding of the amount of profits which the defendant derived from the sale of these infringing machines. The master has made a finding after a careful consideration of all the evidence upon the subject and that finding is presumptively right. The indisputable facts that for years the defendant continued to infringe until it had made and sold infringing machines from which it realized more than $800,000.00, are sufficient to satisfy the mind that its appropriation of the complainant's combination was profitable and when to this is added the evidence that 25% of the cost was ordinarily added by it to make its selling price it seems to me to be inequitable to permit the

defendant to keep this property of the complainant because it mingled it with its own and thus allow it to take advantage of its own wrong. Of such a defense Lord Chancellor Brougham said in *Docker* v. *Somes*, 2 Myl. & Keene, 674:

> "When did a court of justice, whether administered according to the rules of equity or law, ever listen to a wrongdoer's argument to stay the arm of justice grounded on the steps he himself had successfully taken to prevent his iniquity from being traced? Rather, let me ask, when did any wrongdoer ever yet possess the hardihood to plead in aid of his escape from justice the extreme difficulties he had contrived to throw in the way of pursuit and detection, saying, 'You had better not make the attempt, for you will find I have made the search very troublesome?' The answer is, 'The Court will try.'"

"The defendant cites again the cases of *Garretson* v. *Clark*, 111 U. S. 120; *Seymour* v. *McCormick*, 57 U. S. 479 and *Keystone Mfg. Co.* v. *Adams*, 151 U. S. 139, in defense of its course, but they are inapplicable because in such cases of slight improvements on operative machines it is often impossible for the infringer to know the portion of the profit attributable to the improvement and hence its duty to keep that part separate is not so imperative. But where, as in the case in hand, the complainant is entitled to the entire profits from the infringing devices of the defendant the duty is imperative and the failure to discharge it or the failure to distinguish subsequently such profits from its own, subjects, and ought to subject, the infringer and not its victum to any unavoidable loss that results from the inaccuracy either of the defendant's disclosure of its profits or of the complainant's proof when there is any substantial evidence upon which to base an estimate of the profits derived from the infringing devices.

"In like cases upon evidence similar, but far less accurate and convincing than that in this record, infringers have been refused permission to take advantage of their own wrong and

have been required to pay the estimated profits they derived from the infringing devices by the Circuit Court of Appeals of the Sixth Circuit in *Brennan & Company* v. *Dowagiac Mfg. Company*, 89 C. C. A. 392, 396, 162 Fed. 472, 476; *Dowagiac Mfg. Company* v. *Superior Drill Company*, 89 C. C. A. 399, 400, 162 Fed. 479, 480, and *P. P. Mast & Company* v. *Superior Drill Company*, 154 Fed. 45, 57, and by the Circuit Court of Appeals in the Second Circuit in *Wales* v. *Waterbury Mfg. Co.*, 101 Fed. 126, 130, 41 C. C. A. 250, 253, 254, and I am of the opinion that this court ought to pursue the same course in the case before us.

"For the reasons which have been stated I am unable to concur in the view of the majority that the decree of the court below should be affirmed, and I think it should be reversed and a decree should be rendered for the complainant."

CONCLUSION.

We respectfully submit that the question raised by this petition for certiorari is one of general interest, gravity and importance; and we also and especially, earnestly and most respectfully submit, that we have shown that the opinion of the majority of the Court of Appeals in the case at bar confirming, as it does, the final decree in this case and holding that your petitioner is entitled to nominal damages (nominal profits) only on account of the infringing devices accounted for before the Master, is contrary to the decisions of this Court and of the Courts of Appeal in other circuits. Therefore, we respectfully ask, *"in the interest of uniformity of decision,"* that the writ of certiorari prayed for by your petitioner be granted.

Respectfully submitted,

THOMAS B. KERR,
PAUL BAKEWELL,
Solicitors and of Counsel for Petitioner, Westinghouse Electric & Manufacturing Company.

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OCTOBER TERM, 1911.

No. 179.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.,
Petitioner,

vs.

WAGNER ELECTRIC MANUFACTURING CO.,
Respondent.

BRIEF FOR PETITIONER.

PAUL BAKEWELL,
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Counsel for Petitioner.

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a judgment in favor of Petitioner for that amount (Rec., pp. 271–302). Respondent filed exceptions to this report (Rec., p. 547), and on December 24, 1907, the Circuit Court entered an order sustaining said exceptions and decreeing that Petitioner recover from Respondent the sum of one dollar with costs (Rec., p. 552). Thereupon a final decree to that effect was entered (Rec., p. 553) and Petitioner appealed the cause to the Court of Appeals for the Eighth Circuit (Rec., p. 557), which on August 16, 1909, in a majority opinion by Judges VAN DEVANTER and RINER, Judge SANBORN dissenting (Rec., p. 581), affirmed the decree of the Circuit Court with costs (Rec., p. 600). Thereafter Petitioner filed its petition for a writ of *certiorari*, which was allowed by this Court on January 19, 1910 (Rec., p. 658).

Two different forms of converters made by Respondent were involved in the case below: *First*, the form which is now before the Court, and which was found by the court below to be an infringement; and *second*, a form known as "Type M," which the court below found not to be an infringement, and which consequently was not before the Master in the accounting.

Petitioner does not bring Respondent's Type M converter before this Court to ask for any relief against Respondent for infringing the patent by manufacturing and selling the same, but to refer to it in connection with the question of the scope of the patent and the evidence in the accounting. The construction placed on the claim in suit by the Court below by which Type M was excluded from its scope, was one of the premises which led the Court of Appeals to its erroneous conclusion in the accounting.

Assignment of Errors.

As the record in this case comes before the Court in obedience to a *writ of certiorari* it contains no formal assignment of errors, but briefly stated the petition was based upon the following grounds:

FIRST. That the Court of Appeals erred in finding that claim 4 of the patent in suit, upon which claim the suit is

based, was a limited detailed claim covering only part of the infringing device, and that therefore Petitioner was not entitled to recover all of the profits made by the Respondent.

SECOND. That the Court of Appeals erred in finding that the Petitioner had failed to make proof of how much of the total profits made by Respondent on the infringing converter, was due to the presence of the invention therein, and therefore was entitled to a nominal recovery only.

THIRD. That the Court of Appeals erred in not holding that the burden of proof that the whole of Respondent's profits was not due to the patented improvement, was on Respondent and not on Petitioner.

With reference to the first assignment of error we will show, *first*, that the invention of claim 4 in suit was not a mere improvement, but one of great importance, being effectual in removing a serious barrier to the progress of the electric art and displacing all prior devices, and as such entitled the Petitioner to a broad construction of the claim; and *second*, that the Respondent is estopped to contend, and the Court of Appeals to find, so far as concerns Respondent's converters covered by the accounting, that the said claim is of a limited detailed character. We will take up these two points first and then discuss the errors relating to the accounting.

Prior Litigation.

In 1900, the Respondent sold to the Union Carbide Company of Niagara Falls, N. Y., certain electrical converters of the infringing type. Thereupon Petitioner brought suit against the Carbide Company for infringement of its patent No. 366,362 here in suit, by the use of the same, in the United States Circuit Court for the Western District of New York. The suit was defended by Respondent as vendor of the Union Carbide Company, testimony was taken on both sides, and the case was argued at final hearing before Judge HAZEL, who filed an opinion and entered a decree on December 22, 1901, sustaining the patent and holding the said converters to be infringements. Thereupon, Respondent entered an appeal for the Union Carbide Company in the United States Circuit

Court of Appeals for the Second Circuit, which was argued before Circuit Judges WALLACE, LACOMBE and TOWNSEND, on February 22, 1902, and on April 29, 1902, the Court filed an opinion affirming the decision of the Circuit Court, with costs. The opinions of Judge HAZEL and of the Court of Appeals for the Second Circuit are reported at 112 F. R., 417, and 117 F. R., 495. These facts are all set out in the bill of complaint, wherein it is claimed that by reason thereof (Rec., p. 5, paragraph VI.)—

"the matters and things found and decreed in the said suit against the Union Carbide Company are *res adjudicata* against the said Wagner Electric Manufacturing Company."

In the answer of the Respondent, filed October 6, 1902, the above facts are all admitted in paragraphs VI and VII (Rec., pp. 10–11), and in paragraph VIII (Rec., p. 11) the Respondent admits Petitioner's conclusion as to estoppel, as follows:

"This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union Carbide Company was defended by this defendant and was argued by its counsel, and that the matters and things found and decreed in said suit against the Union Carbide Company are *res adjudicata* against this defendant."

The evidence shows that after the decision by the Court of Appeals in the Union Carbide suit, the Respondent changed its construction in one particular, and thereafter manufactured the changed form, known herein as Type M. No contest was made in regard to the original form, but there was controversy in the Courts below was as to whether the changed form (Type M) was an infringement of the patent in suit. The court below held that it was not.

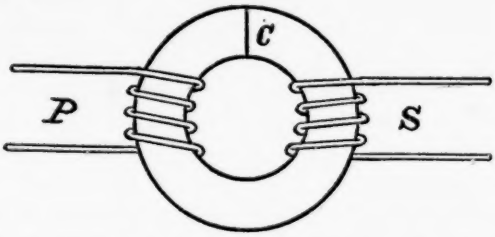
The Static Converter or Transformer.

An electric current is made up of two factors, viz, volume or current expressed in amperes, and pressure or potential expressed in volts. The product of one multiplied by the other

gives the amount of the electric energy contained in a current, and this is expressed in watts. This case relates to alternating currents, the volume and pressure of which can be relatively varied, and has specially to do with the apparatus (known formerly as a converter, but now as a transformer) by means of which such variation is effected. For safety and economy in generation and use, it is important that the potential should be low, while for economy in transmission and distribution it is important that it should be high. Consequently it is customary to generate a current of low potential and large volume, then transform the same at the generating station into a current of high potential and small volume, transmit the latter to the place of use, and finally transform it back into a current of low potential and large volume, suitable for use in the lamps, motors or other translating devices which it is intended to operate. It is not of importance here to go into the reasons for these things, but in passing we will state that the ability to thus use high tension currents for transmission has extended the area of distribution from a few miles to hundreds of miles and made possible the utilization of remote and inaccessible water powers, and enormously increased the use of electricity for domestic and industrial purposes. The instrument by which the alternating current can be changed in volume and pressure is known as the "static transformer" because it has no moving parts.

It was early discovered that when an electric current passed through a conductor, there was produced around the conductor a condition of stress which manifested itself in various ways. The area so affected was called a magnetic field. It was also discovered that if the current was an alternating one, the magnetic field experienced alternations or reversals of magnetism corresponding to those of the current; that if a second conductor, independent of the first, was placed in the magnectic field, these alternations would induce in such second conductor a current similar to that in the first; that this effect was increased by winding the two conductors on a core of iron, since the core by affording an easier path for the magnetism than the surrounding air concentrated the strength of the field therein, and that the strength and efficiency of the magnetic field were still further increased by

joining the ends of the iron core, so that there should be no break or gap in the magnetic circuit.



The fundamental parts of the static transformer therefore consist of an iron core (C) and two conductors, one of which (P), known as the "primary", supplies the inducing current, and the other (S), known as the "secondary", carries off the induced current. If the number of turns of the two conductors around the core is the same there will be no change in volume and potential, but if those in the secondary be less than those in the primary the volume of the secondary current will be greater and its potential less, while if the number of turns in the secondary be the greater, the volume of the secondary current will be less and its potential greater.

Transformers are divided into two classes, the "core type", in which the circuits are wound on a straight bar or a ring-shaped core, and the "shell type", in which the core not only extends through the coils, but surrounds and encases them on the outside, thereby bringing a very large amount of the wire within the strongest part of the magnetic field. The transformers in suit are of the shell type.

The Problem.

At the time Mr. Westinghouse made the invention in suit, the art of transforming and distributing alternating currents was seriously impeded by the failure of the transformer to keep up with the development in size and capacity of the generating apparatus on one side and the translating apparatus on the other. At that time the maximum capacity of commercial transformers was ten kilowatts. Beyond that they could not go, while the capacity of generators and motors was running up into hundreds of kilowatts.

The opinion of the Court of Appeals of the Second Circuit in the Union Carbide case, as reported in 117 Federal Reporter, 595–510, was stipulated in evidence (Rec., p. 336). On page 498 of that report, the Court says:

"It appears that in the early history of the art only small converters were used, and the heat generated in them was dissipated by radiation into the surrounding air. But when the art began to call for converters exceeding 10 kilowatts in capacity, it was found, as stated by the expert for complainant, 'that the capacity of the transformer increased as the cube of the linear dimensions, and the heat, if the amount of loss was held stationary, would increase in like proportion, while the radiating surface would increase only as the square of the linear dimensions.' Further difficulties were encountered, resulting from the inequality of the conductivity of iron and copper. *The testimony herein shows that these difficulties were so serious that for some time it was feared that the practical limit of such transformers had been reached.*"

Prior to Mr. Westinghouse's invention, efforts had been made to prevent the production of heating or Foucault currents in the core by *insulating* the core plates from each other by means of washers or plates of non-magnetic material or by air spaces, as in the Westinghouse patent 342,553 (Rec., p. 287), and in the Stanley patent 349,612 (Rec., p. 317); and in the use of currents of very high potential, air spaces were provided for the purpose of *insulation* between the coils and the core, as in the Thomson patent 360,122 (p. 311, lines 17–28), and between the coils, as in the Stanley patent 428,574 (p. 321); *but the idea never occurred to any one to connect the increased additional radiating surfaces thus obtained with an exterior radiating case capable of receiving and dissipating the heat, by means of an insulating carrier, such as oil, possessing high powers of heat absorption and transmission.*

The Patent in Suit.

The patent (Rec., p. 244) shows an electrical converter of the shell type, having the usual primary and secondary coils and iron core. The coils and core are so constructed and ar-

ranged as to form open spaces in the core, so that when the converter is placed in an enclosing case filled with a non-conducting fluid or gas, the latter may circulate through such spaces and about the converter, so as to preserve the insulation, exclude the moisture, and cool the converter. The patent specifies oil, or paraffine or other suitable material, which will assist in preserving the insulation and will not be injured by heating. The open spaces allow the oil to have ready access to the coils and the inner surfaces of the core and when heated thereby to circulate freely, so that convection currents shall be set up therein, which shall carry the hotter portions of the oil to the cooler surfaces of the enclosing case. The case has a large radiating surface which causes a rapid dissipation of the heat in the surrounding air. Hence, by this continuous circulation of the oil, the heat which is inevitably generated in the coils and core of the converter during its normal use, is carried away and dissipated, so that the temperature of the converter is kept from rising to a harmful extent.

The stated object of the invention is to provide a converter " which will not become overheated when employed for a long time in transforming currents of high electromotive force " (p. 171, lines 16–20). This is accomplished, as set forth in the 4th claim, by making the converter " with open spaces in its core," and immersing it in a non-conducting fluid or gas contained in an enclosing case. In practice, oil is used.

There are three elements in the combination of claim 4:

(1) An electric converter constructed with open spaces in its core.

(2) An inclosing case.

(3) A non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter.

The first element is a complete converter of the shell type, *i. e.*, one in which the coils are enclosed by the massive iron core. It has a core composed of a large number of soft iron plates, bound together by end plates and longitudinal bolts in the usual way. The core has two parallel rectangular openings extending through it from end to end, in which the primary and secondary coils are placed. In the ordinary construction these coils filled the openings, so that no open spaces existed in the core of the completed converter.

The patent describes two ways of providing open spaces in the core. It says (Record, p. 171, lines 56–70):

(a) "Each group of—say, five or six plates—thus applied is preferably separated from the succeeding group by air spaces. These may be produced by passing tubes f^1, f^1, which may be of soft iron or other metal, or of vulcanized fibre, along the length of the plates. It may be sufficient in other instances to block the group of plates apart at intervals, instead of extending the tubes the entire length.

(b) "Preferably, also, the primary and secondary coils C^1 C^2 are separated from each other in a similar manner. In this instance blocks or tubes f^2, of non-conducting material, are used. The tubes may be perforated, as shown at f^3 f^3."

Describing the function of these open spaces, the patent (lines 79–82), says that the oil "circulates through the tubes and the intervening spaces of the coils and plates, and preserves the insulation, excludes the moisture and cools the converter."

These two ways of forming open spaces in the core are specifically claimed in claims 1, 2 and 3.

The formation of the open space in the core by separating the coils is the subject of claim 1, as follows:

"1. The combination, substantially as described, of a soft iron core, and parallel primary and secondary coils having an open space intervening between them."

The formation of open spaces by the subdivision of the core is the subject of claim 2, as follows:

"2. The combination, with the primary and secondary coils of an electric converter, of a core composed of laminæ of soft iron arranged in groups, said groups being separated by open spaces."

Claim 3 is specifically limited to the use of tubes for separating the plates, as follows:

"3. In an electrical converter, a core composed of soft iron plates arranged in groups and open tubes intervening."

These three claims (not in issue in the case) go to several features of construction of the converter by which open spaces

are made in the core, so that the otherwise solid interior of the converter is opened up, and the heat-radiating surface of the converter, which before was confined to the exterior of the core, is increased.

The Claim in Suit.

Claim 4 in suit is as follows :

"The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter."

This claim is not in terms limited to either of the above ways of making the open spaces in the core, but covers broadly "an electric converter constructed with open spaces in its core," using the same expression, "open space" as is used in claims 1 and 2 in designating the openings *through the core*, made in one case by separating the coils inside of the core, and in the other by separating the groups of core plates. Moreover, the function of the oil as stated in the claim is the same as that stated in the specification in connection with both sets of openings, viz, "adapted to circulate through said spaces and about the converter," the specification stating that the oil "circulates through the tubes and the intervening spaces of the coils and plates" (Rec. p. 171, lines 79–80).

It is obvious, therefore, that the patentee had no intention of limiting claim 4 to the open spaces formed by separating the groups of core plates, which is claimed in claim 2, as contended by the Respondent, but in terms included the open spaces in the core formed by blocking apart the coils, claimed in claim 1.

This was the view taken by the Circuit Court in the Carbide case (112 F. R. 420), for Judge HAZEL said :

"The claim is that by the arrangement of various known elements and by the introduction of new elements, to-wit, dividing the iron into sections, and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils may be carried on, aided by oil as an insulating material, and adding an inclosing case, a new combina-

tion producing a new and beneficial result not before attained is contributed to the art."

He so construed and sustained the patent.

The Court of Appeals (117 F. R., 495) also took the same view. In regard to claim 4 it said (pp. 497, 498):

"This claim covers such an inclosing case as will confine the non-conducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them." * * *

"In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

Equally significant is the adoption by the Court of Appeals, after reciting the efforts made to overcome the difficulty of internal heating, of the language of Petitioner's expert, as follows, viz. (p. 498):

"Then as complainant's expert says: 'The problem of making large units became greatly simplified. It became only necessary to so subdivide the coils and iron so as to expose a uniform surface as compared with the losses in the transformer in all sizes, and to provide a case having sufficient external surface to enable the oil again to give up its heat to the surrounding air, to make transformers of any desired capacity."

It is plain from these extracts that the Court of Appeals of the Second Circuit did not regard claim 4 as limited to open spaces in the core produced by dividing the core into sections, but that it also included open spaces *in the core* formed by separating the coils so as to permit the circulation of the oil through the core. The coils are in the core and "an open space intervening between them" is necessarily an open space in the core, and is so shown and described in the patent. As there are two coil openings e^2 and e^2, there are two open spaces in the core between the coils.

For the purposes of the invention, it was immaterial how the heated internal parts of the transformer were opened up to the contact of the oil, whether by transverse or by longitudinal openings. From the very construction of the device,

it being of the shell type in which the coils are surrounded not only internally but externally by the core, such openings, however made, *must be in the core*, as otherwise they would not open up the heat-producing parts and give the oil access thereto, which is the only function of the open spaces, whether extending transversely or longitudinally through the converter, or between groups of core plates or between the coils.

In the dissenting opinion below, Judge SANBORN said (Rec., p. 595):

"'What was the object of this invention? The prevention of the overheating of the converter and of every part of it. What was the root, the principle, or mode of operation whereby this object was to be attained? The circulation of oil in a sealed case over increased radiating surfaces 'through the tubes and the intervening spaces of the coils and plates' whereby the converter is cooled, insulation is preserved and moisture is excluded. In my opinion the principle of the invention patented under claim four is not either the rectangular openings across the planes of the iron plates, nor the tubes between the plates, nor the blocked spaces between them, nor the openings between the coils, nor any of the elements of the combination, all of which are described in the specification as preferably employed, but it is the circulation of the oil over increased radiating surfaces by means of the combination patented through open spaces in and about the converter, and what Westinghouse secured by this claim was not the particular openings he specified as preferably made in the core or in the converter, but, as held by the Circuit Court of Appeals of the Second Circuit in the decision upon which this and other suits for the infringement of this patent rest, 'the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.'"

The Claim is not Limited by its Terms.

The terms of the claim do not require its limitation to transverse spaces in the core. It calls for:

"The combination, substantially as described, of *an electric converter constructed with* open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter."

An electric converter, as we have seen, is a device constructed of primary and secondary coils, and a core. The patented converter being of the shell type has the coils surrounded both internally and externally by the massive iron core, which in the present instance is composed of thin plates of soft iron. The claim requires that *this converter* should be "constructed with open spaces in its core," and not that the *core* should be constructed with open spaces. Such a construction of the core is described in claim 2, viz., "a core composed of laminæ of soft iron arranged in groups, the said groups being separated by open spaces," and also in claim 5 where similar language is used. But in both of these instances the core so constructed is claimed in combination "with the primary and secondary coils of an electric converter," while in claim 4 in suit, the combination is between the whole converter, the inclosing case and the non-conducting fluid. It is obvious that *an electric converter can be constructed* with open spaces in its core, either by separating the core plates into groups with open spaces between the groups, or by separating the coils so as to form open spaces between them inside of the core, or by reducing the size of the coils so as to leave open spaces in the core between the core plates and the coils. In each case *the converter is constructed* with open spaces in, within or inside of, its core.

This is in accordance with the spirit of the claim, because the combination exists between the electric converter, the inclosing case and the non-conducting fluid in each case, and the function of the combination is clearly accomplished in all. The oil circulates through "the intervening spaces of the coils and plates, and preserves the insulation, excludes the moisture, and cools the converter" (patent, p. 1, lines 78-82, Rec., p. 171). This is the construction which was given to the claim by the Court of Appeals of the Second Circuit in the Carbide case, while the Court of Appeals for the Eighth Circuit in the present case held that it was a limited detailed claim, and did not cover the openings between the coils, and between the coils and the core, and therefore awarded nominal damages, because the Petitioner had not shown the proportion of profits that was due to the transverse openings in the core, as distinguished from that due to the longitudinal openings in the core.

It may be said, therefore, that the language of the claim is susceptible of two constructions, which brings the case within the rule laid down by this Court in McClain vs. Ortmayer, 141 U. S., 419, 425, "that, in case of doubt, where the claim is fairly susceptible of two constructions, that one will be adopted which will preserve to the patentee his actual invention."

The Claim is not Limited by the Prior Art.

There is nothing in the prior art which requires the claim to be limited to open spaces in the core plates.

The Court of Appeals in the case at bar, after referring to the previous decisions, said (Rec., p. 584):

"In the foregoing cases it was decided that most, if not all, of the elements of the combination of claim four were old in the art, but the combination being new it was held patentable, and in this view we concur."

In the Carbide case the Court of Appeals of the Second Circuit, discussing the question of patentable novelty (117 Fed. Rep. 496), said:

"Converters having open spaces in the core to avoid heating were old. In the Hindley & Buffham patent of 1882 (No. 266,290), for a generator, is disclosed the arrangement of wires 'whereby openings or spaces are provided for the free circulation of air' in order 'to *overcome* in a great degree the generation of heat;' and the patentees describe the winding of the coils 'in separate groups, so that air can freely circulate through them.' And in this patentee's earlier patent No. 342,553, of 1886, he stated that its object was to 'construct the converter in such manner that there shall be but *little loss of energy* through heating the iron,' and described a core composed of thin plates 'separated from each other by intervening washers or plates of non-magnetic material, such as vulcanized fibre, and an air space may be left, if desirable, between each two plates.' The use of oil or other non-conducting fluid to reduce the conductivity of the wire coils of a dynamo when driven at a high speed and thus *reduce* the heat is described in the Millar patent No. 270,457, of 1883.

"Defendant's counsel chiefly rely on the Stanley patent No. 349,612, of 1886, for an induction coil, in which, they say, they 'have the identical combination of the fourth claim of the Westinghouse patent.' This patent is for a converter.

The plates of the core are so stamped as to form interior and exterior teeth. Of the plates the specification says:

> "'They are placed upon each other, the positions of the teeth coinciding; but they are *insulated* or separated from each other by paper, cloth, asbestus, oil silk or other well-known insulating material, and they are firmly bolted or otherwise secured together.'

"The specification further says:

> "'The coil is preferably protected by being placed within a suitable case consisting of a base F, to which there is secured a removable cover F'. In the cover there are preferably formed perforations *f f*.'

"Although the drawings do not show open spaces in the core, and defendant's expert assumes that there are no such spaces, yet it appears from the foregoing description that the patentee conceived the idea of a separation of the plates either so as to admit air or to provide for the insertion of some fabric for purposes of *insulation*. The description and drawings of the Stanley patent show a base plate and perforated cover adapted to ventilate the converter and to protect it from physical injury. We have, then, in the prior art every element of the combination claimed, and a physical combination of the same elements, except that the separations in Stanley *are not adapted to, and the construction of the inclosing case is prohibitive of*, the purposes of the claim in suit. This claim covers such an inclosing case as will confine the nonconducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air-tight, closed converter. Does the combination covered by the claim in suit show patentable invention? If the idea of ventilation be rejected, and the patent be confined to the statement of and claim for the inclosed construction, it embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose. The primitive telegraph coils of the Brooks patent of 1878, were immersed in oil 'to protect them from the influence of the damp atmosphere'; and the Miller dynamo without open spaces in its core, had its coils suspended in a tank of oil. But the construction of these devices excluded the novel idea of oil which would 'circulate through the tubes and intervening spaces of the coils and plates.' And while the assumed or suggested separations between the plates of the Stanley patent would be sufficient *for insulation only, and not for circulation*, its inclosing case is not sealed so as to contain the circulating oil, and the use of oil is not suggested. In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts

as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces whereby the heat from the oil radiated to the surrounding air. *If there is any doubt upon the question of patentability, the practical and commercial results of this improvement must resolve such doubt in its favor.*"

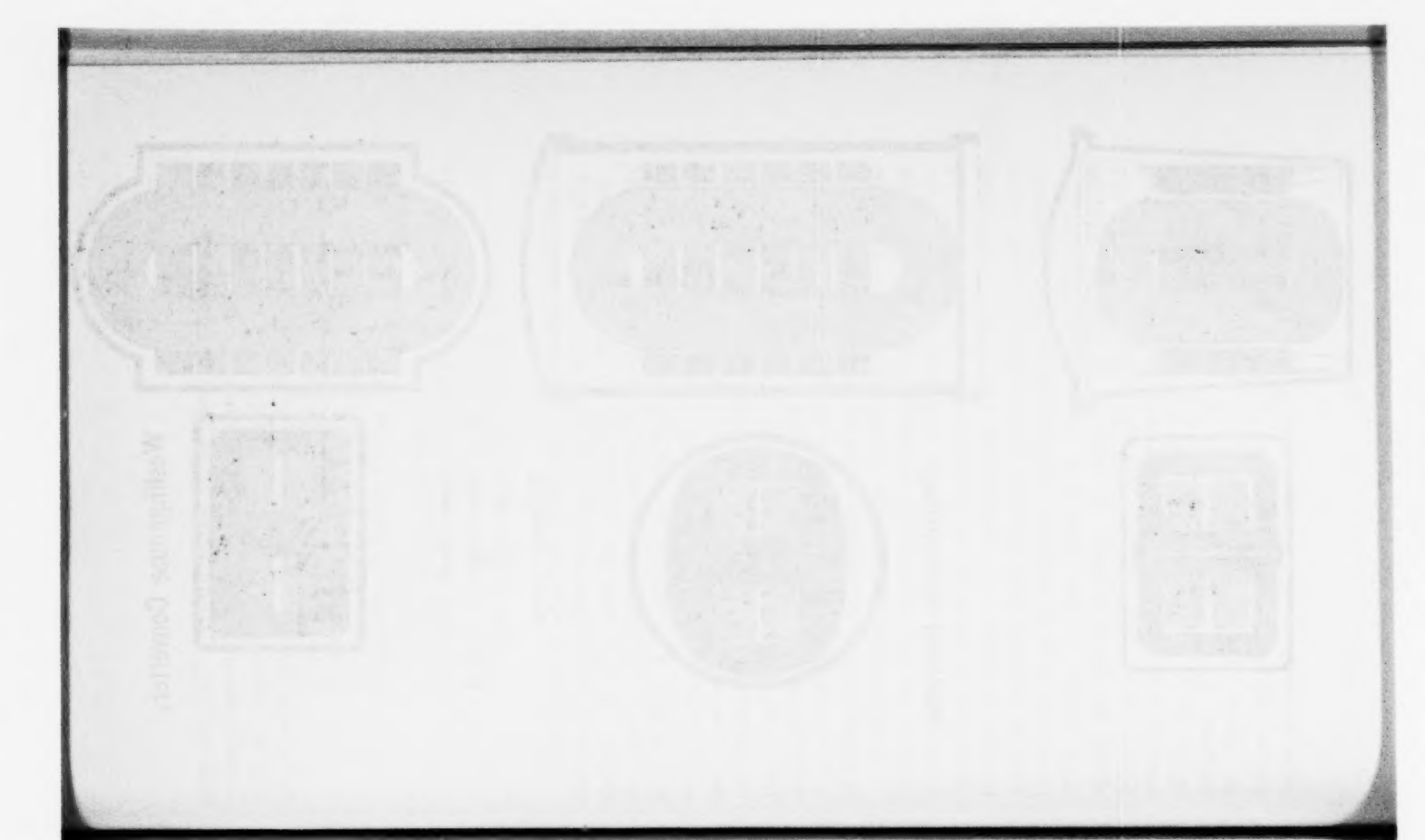
As to the practical result of the invention, the Court of Appeals in the Carbide case, said (117 F. R., 498) :

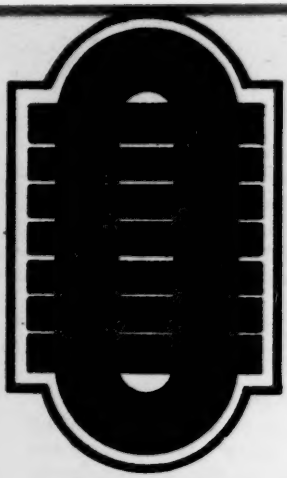
"The practical result of the invention in suit, as testified to by complainant's experts, was to so increase the capacity of converters that, while a dry converter, cooled by the natural circulation of air, *is limited to 10 kilowatts, the oil insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts.*"

The limitation to 500 kilowatts was a commercial one imposed by the size of the inclosing case, and the large quantity of oil necessary, when the capacity of the converter exceeded 500 kilowatts, since it led to the prohibition by the fire insurance companies of the use of such converters inside of buildings. The Thomson patent, which was also passed upon by the Court of Appeals in the Carbide case, met this difficulty by cooling the oil in the Westinghouse converter by means of a pipe of running water, and thereby made it possible to use any capacity of Westinghouse converter with a permissible quantity of oil. The Thomson patent was held to be lacking in patentable novelty, in view of the common use of water cooling for analogous purposes, but the expedient removed the commercial limit to the use of the Westinghouse invention, so that as the opinion shows (p. 499) "converters with a capacity of about 2,000 kilowatts have been constructed, and the limit has not yet been reached."

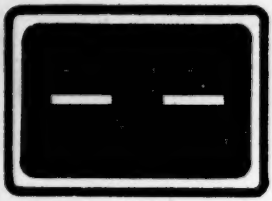
There is, therefore, nothing either in the terms of the claim in suit or in prior state of the art, which requires the patent to be limited to open spaces formed in or between the core plates, as distinguished from open spaces formed in the core between the coils, or between the coils and the inner edges of the core plates.

The invention being "one of such novelty and importance as to mark a distinct step in the progress of the art, as distinguished from a mere improvement or perfection of what had

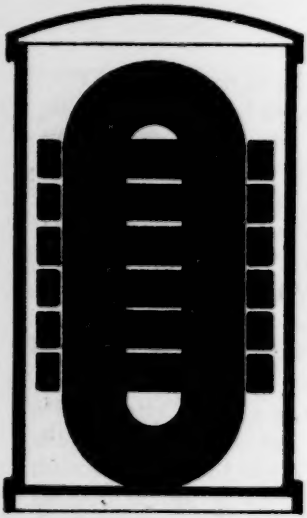


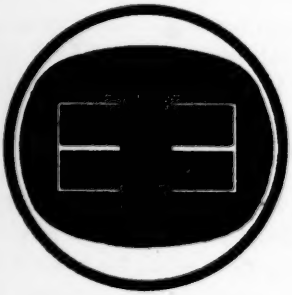


Westinghouse Converter.

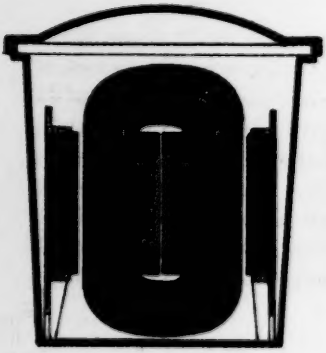


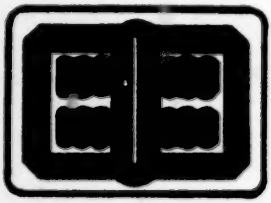
Case — black.
Core — blue.
Coils — red.
Oil Spaces — white.





Respondent's Converter.





Respondent's Type M Converter

gone before" (Westinghouse vs. Boyden, 170 U. S., 562), the patentee was entitled to a broad construction of the claim, and an application of the doctrine of equivalents commensurate with the importance of the improvement in the art.

Paper Bag Patent Case, 210 U. S., 415.
Hobbs vs. Beach, 180 U. S., 401.
Hoyt vs. Horne, 145 U. S., 309.
Consolidated Valve Co. vs. Crosby Valve Co., 113 U. S., 178.
Loom Co. vs. Higgins, 105 U. S., 598.
Elizabeth vs. Pavement Co., 97 U. S., 137.
Ives vs. Hamilton, 92 U. S., 430.
Winans vs. Denmead, 15th Howard, 343.

The Court of Appeals held that the claim in suit was a limited detailed claim covering only one part of the infringing device. In order that the construction of the infringing device and its relation to the invention claimed in the combination of claim 4 in suit may be fully understood, we show on the opposite page, diagrammatic illustrations in longitudinal section and cross-section of the two devices in so far as is material to the present issue, and for the information of the Court we also show like views of Respondent's Type M converter, although the questions of infringement and recovery, so far as it is concerned, were not included in the petition for the writ of certiorari, and are not now urged by Petitioner.

It will be seen that the open spaces between the coils, and between the coils and core, in the Respondent's converter are quite small, the testimony (Rec., p. 101, Q. 3) showing that the space between the coils was about three-eighths of an inch, and between the coils and core one-tenth of an inch. The Court of Appeals held that these spaces were not covered by the claim in suit, and that the failure of Petitioner to apportion Respondent's profits between them and the substantial transverse spaces to which it held the claim to be limited, was the ground upon which it set aside the Master's finding and awarded nominal damages. The testimony referred to is that of Mr. Beam, who measured one of the Union Carbide transformers, which were included in the account, and Mr. Beam on cross-examination (Rec., p. 102, x-Q. 9) said that owing to the bulging of the insulation the space between the coils was much less than three-eighths of an inch. There is no

other testimony in regard to the size of the open spaces between the coils and between the coils and core in Respondent's infringing converter, and while a great deal was said on this subject in the Master's report, and in the opinion of the Court of Appeals, yet Respondent gave no evidence as to the size of these open spaces, but contented itself with a mere assertion of their existence. It is obvious, however, that they were merely an extension, or carrying forward, of the Westinghouse idea of opening up the internal or heat-producing parts of the converter to afford access of the oil thereto, and that the difference in operation, if any, is merely one of degree. Respondent has no patent on this feature.

Respondent's Type M Converter.

When, after the decision in the Court of Appeals in the Carbide case, Respondent changed its construction to that of Type M by withdrawing the spacing strips from between the groups of laminae and closing up the transverse openings in the core, it made *large* open spaces longitudinally through the core by placing the spacing strips between the coils, and between the coils and the core, as illustrated in Respondent's Catalogue (Rec., pp. 117, 144). In regard to the latter, the Catalogue says (Rec., p. 138):

"The cross-section of a 15 K. W. transformer, on page 10 (Rec., p. 144), illustrates very clearly the excellent provision which has been made for cooling primary and secondary coils, and iron, by keeping up a natural circulation of oil. This is one of the most important advantages of the shell type transformer. These oil ducts are so proportioned and so placed, that while they keep all parts of the transformer cool, and thus prevent deterioration of insulation and reduce aging of iron to a minimum, they cause a minimum loss in efficiency."

These three converters, namely, the Westinghouse, Respondent's infringing converter, and Respondent's Type M converter, all operate in precisely the same way, producing the same result. The oil, as set forth in the patent in suit (Rec., p. 171, lines 80-82), circulates through "the intervening spaces of the coils and plates, and preserves the insulation, excludes the moisture, and cools the converter," and they are therefore equivalent structures.

We discuss this question with reference to Respondent's Type M transformer, because in the evidence before the Master, Respondent made some comparative tests between its infringing converter and its Type M, and on the basis that the patent was limited to the transverse openings between the groups of core plates, claimed that as there was no difference in the operation of the two structures, there was no utility in the invention, and that, therefore, Petitioner was entitled to nominal damages only. Our answer to this point will be made in our argument on the accounting feature, our present point being that Type M is a subsequent and equivalent construction, and that no argument against Petitioner's right to a recovery can properly be based upon its performance, for the reason that as an equivalent it is clearly within the claim in suit upon any liberal reading of the same.

Hoyt vs. Horne, 145 U. S., 308-9.
Winans vs. Denmead, 15 Howard, 340-1.

ESTOPPEL BY PRIOR ADJUDICATION IN THE CARBIDE CASE.

The bill pleads the history of the Carbide Case (Rec., pp. 5, 6) as follows :

" VI. That on or about the 10th day of May, 1900, a bill of complaint was filed in the United States Circuit Court for the Northern District of New York by the complainant herein against Union Carbide Company, which said Union Carbide Co. was a user of electrical converters manufactured and sold by the Wagner Electric Manufacturing Company ; that on or about the 15th day of June, 1900, the said cause against the Union Carbide Co. was certified and transferred to the Western District of New York, which Western District had, subsequently to the 10th day of May, and prior to the 15th day of June, 1900, been created by Act of Congress and duly organized ; that on the 2d day of July, 1900, an answer to the said bill was duly filed by Union Carbide Company, and on or about the 6th day of August, 1900, complainant's replication was filed. That testimony was thereafter taken by the respective parties and filed in the Clerk's office of said United States Circuit Court for the Western District of New York, and that thereafter and on or about the 24th day of May, 1901, the said

cause came on for final hearing before the Honorable JOHN R. HAZEL, sitting as a Judge of the Circuit Court at Buffalo, within the said Western District, and was argued by counsel upon the pleadings and proofs; that on the 22d day of November, 1901, the decree was entered therein, in which it was adjudged, among other things, that Letters Patent of the United States No. 366,362, granted on July 12, 1887 (being the same letters patent hereinbefore referred to in this bill), are good and valid in the law; that the complainant, Westinghouse Electric and Manufacturing Company, is entitled to the exclusive right to the said letters patent and in and to the invention thereof, and that the defendant Union Carbide Company (using, as above mentioned, the electrical converters manufactured by Wagner Electric Manufacturing Company) had infringed upon the fourth claim of Letters Patent No. 366,362 and had violated the exclusive rights of the complainant thereunder.

"That thereupon, to wit, on December 19, 1901, the Union Carbide Company appealed from the decree of the Circuit Court of the United States Circuit Court of Appeals for the Second Circuit, and, proper proceedings being had, the said appeal was argued before the said court of appeals composed of the Honorables WILLIAM J. WALLACE, E. HENRY LACOMBE and WILLIAM K. TOWNSEND, Circuit Judges, on the 27th day of February, 1902, and on April 29th, 1902, the said Court of Appeals filed an opinion affirming the decision of the Circuit Court with costs to your orator.

"That the devices involved in the said suit, and which were used by the Union Carbide Company, the defendant therein, were manufactured and sold by the Wagner Electric Manufacturing Company, the defendant herein, and that said suit against the Union Carbide Company was defended by said Wagner Electric Manufacturing Company and was argued by its counsel, and that the matters and things found and decreed in the said suit against the Union Carbide Company are *res adjudicata* against the said Wagner Electric Manufacturing Company.

"VII. That the said defendant has well known all the facts hereinbefore set forth, and has been duly notified of the grant and date of your orator's said patent and of its infringements thereof, but nevertheless, contriving to injure your orator and to deprive it of its profits, benefits and advantages which might and otherwise would have accrued to your orator from the said patent, the said defendant has, since the 12th day of July, 1887, and subsequent to the said assignment to your orator, within the Eastern District of Missouri and elsewhere throughout the United States, made, used and sold, and caused others to make, use and sell without the license of your orator, and against your orator's will and in violation of

your orator's rights, and does now continue to make, use and sell, and cause others to make, use and sell devices or apparatus which embody the invention or discovery claimed in your orator's said patent, the exclusive right to make, use and sell which is by law vested in your orator as aforesaid; and the said defendant refuses to pay to your orator any of the profits which it has made by such unlawful manufacture, use and sale, or to desist from the further infringement of said patent; all of which acts are in violation of the rights vested in your orator, and are contrary to equity and good conscience and tend to the manifest injury of your orator in the premises."

The answer (Record, pp. 10–11) admits fully all the allegations of the bill in regard to the Carbide case, as follows:

"VI. This defendant admits that on or about the 10th day of May, 1900, a bill of complaint was filed in the United States Circuit Court for the Northern District of New York, by the complainant in this suit, against the Union Carbide Co., which said Union Carbide Company was a user of electrical converters manufactured and sold by this defendant; that on or about the 15th day of June, 1900, the said cause against the Union Carbide Company was certified and transferred to the Western District of New York; that on the 2d day of July, 1900, an answer was filed in said suit by the Union Carbide Company, and on or about the 6th day of August, 1900, replication was filed; that testimony was thereafter taken by the respective parties and filed in the Clerk's office of the United States Circuit Court for the Western District of New York; and that thereafter and on or about the 24th day of May, 1900, said cause came on for final hearing before the Honorable John R. Hazel, sitting as Judge of the Circuit Court at Buffalo within the said Western District, and was argued by counsel upon the pleadings and proofs; that on the 22d day of November, 1901, a decree was entered therein, in which it adjudged that the fourth claim of said United States Letters Patent No. 366,362 of July 12, 1887, was a good and valid claim in the law; that the complainant herein was entitled to the exclusive right to said letters patent and in and to the inventions described and claimed in claim 4 thereof; that the Union Carbide Company had infringed upon the said fourth claim of said letters patent and had violated the exclusive rights of the complainant under said fourth claim. But this defendant denies that by the said decree it was adjudged that any of the other claims of said Letters Patent No. 366,362 were good and valid in the law, or that the complainant was entitled to the exclusive right in and to the invention claimed in any of the other claims of said letters patent;

and this defendant further denies that the Union Carbide Co. was adjudged by said decree to have infringed upon any other claim of said Letters Patent No. 366,362. And this defendant alleges that after the filing of the said bill of complaint against the said Union Carbide Company, as above set forth, and before the said final hearing before the Honorable JOHN R. HAZEL, above mentioned, claims 1, 2, 3 and 5 being all of the remaining claims of said Letters Patent No. 366,362, were withdrawn by the complainant from the consideration of the Court and were not included in said decree.

" VII. This defendant further answering admits that on the 19th day of December, 1901, the said Union Carbide Company appealed from said decree of the Circuit Court to the United States Circuit Court of Appeals for the Second Circuit and that proper proceedings were held, and that said appeal was argued before the said Court of Appeals, composed of the Honorables WILLIAM J. WALLACE, E. HENRY LACOMBE and WILLIAM K. TOWNSEND, Circuit Judges, on the 27th day of February, 1902, and that on April 29, 1902, the said Court of Appeals filed an opinion confirming the decision of the Circuit Court with costs to the complainant.

" VIII. This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union Carbide Company was defended by this defendant and was argued by its counsel, and *that the matters and things found and decreed in said suit* against the Union Carbide Company are *res adjudicata* against this defendant."

The infringing transformer, of which the Respondent made and sold 6,524 during the period covered by the accounting, is illustrated at page 108 of the record in connection with an article in the "American Electrician" of January, 1900, which shows the transformer made by Respondent and before the Court in said Union Carbide Case. The stipulation found at pages 14 and 15 of the record relates to that identical transformer, and is in the following words :

" That the defendant, prior to the filing of the bill of complaint herein, did manufacture and sell electrical transformers constructed and intended to be used as shown and described in figure 24 of an article which appeared in the issue of the 'American Electrician' for January, 1900, on page 13 thereof, said illustration showing a transformer having parallel primary and secondary coils and a core composed of thin plates of soft iron arranged in groups, said groups being separated from each other by blocks, thus providing spaces between the

groups of plates; and the coils and core being enclosed in a metal case containing a non-conducting fluid which circulates through the open spaces in the laminated core."

There never has been any dispute in this case as to what was found and decreed in the Carbide case, and the Master refers to these findings in his report. The opinions of the Courts in the Carbide case are referred to in the Master's report in several places, notably at pages 284 and 285 of the record, and in the majority opinion of the Court of Appeals at pages 583 and 584 of the record. There is also a stipulation (Record, p. 336) that the report of the opinion of the Court in the Carbide Case, in 117 Fed., 495, shall be considered in evidence in the case at bar.

It thus fully appears from the pleadings, the stipulations in this case, and the opinions of the Circuit Court and the Court of Appeals in the Carbide Case (112 Fed., 417, 423; and 117 Fed., 495, 501), what were "*the matters and things found and decreed in said suit against the Union Carbide Company*," which paragraph VIII. of the answer specifically admits "are *res adjudicata* against this defendant" (the Respondent here).

The opinion of the Circuit Court for the Northern District of New York in the Carbide Case, as found reported in 112 Fed., 417-423, so far as the same is material to the present discussion, is in the following words:

Opinion of Judge Hazel in the Carbide Case.

"HAZEL, District Judge. These two suits in equity for infringement of United States letters patent No. 366,362, granted to George Westinghouse, Jr., July 12, 1887, and No. 508,654, issued to Elihu Thomson, November 14, 1893, substantially relate to the same general subject. They are for improvements in electrical converters or transformers. The suits were heard at the same time by consent of parties. The complainants own the patents by assignments, and are jointly interested as cross licensees. Patent No. 366,362 relates to the construction of an apparatus for transforming alternating currents 'into currents differing therefrom in certain characteristics.' The object of the invention is thus stated in the patent:

> "'To provide a simple and efficient converter, which will not become overheated when employed for a long time in transforming currents of high electromotive force, and which will be thoroughly ventilated.'

"The specifications, after describing in detail the accompanying drawings, which set forth features of the invention, contain the following:

> "'It may be preferred in some instances to surround the converter with some oil or paraffin or other suitable material, which will assist in preserving insulation, and will not be injured by heating. This material, when in a liquid form, circulates through the tubes *and the intervening spaces of the coils and plates*, preserves the insulation, excludes the moisture, and cools the converter.' (Italics ours.)

"The patent has five claims. The fourth only is stated to be infringed. It reads as follows:

> 'The combination, substantially as described, of an electric converter, constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter.' * * *

"The answer in each case pleads anticipation and want of novelty. It was stipulated at the time of taking proofs that defendant had in use one or more transformers, described by patents in suit, at its works, subsequent to the grant and assignment of said patents to complainants. If, then, the defense of anticipation and want of novelty fails, infringement is admitted. The Wagner Electric Manufacturing Company of St. Louis, Mo., furnished the alleged infringing transformers to the defendant, and it may therefore be regarded as the real defendant in each case." * * *

"The particular purpose and object of transformers is tersely stated in defendant's brief to be 'an apparatus whereby the current is generally transformed or converted from a certain pressure and quantity to a certain other pressure and quantity, or it may be transformed or converted to the same pressure or quantity, but usually is transformed or converted from a higher pressure and smaller quantity to a lower pressure and larger quantity, in order that the higher pressure may be transmitted on the lines outside of buildings, and transformed or converted to lower pressure and greater quantity for use in buildings.' Their utility is well established. It has resulted in the expansion of the use of electric energy to such an extent that there is substantial basis for the claim that the invention of the static transformer and subsequent improvements has created a surprisingly memorable period in the development of electric science, followed by amazing commercial success. It made possible the utilization of electricity at far distant points, as well as its application in various ways, 'and in any desired machine, from motors developing hundreds of horse power to the fragile filaments of incandescent lamps.' Noteworthy as was the suc-

cess attained by the generator, dynamo, and commutator, the surprisingly noteworthy advance in electrology made possible by the transformer is equally deserving of great praise. That improvements were needed to adapt the transformer to the manifold uses anticipated by those skilled in the art is not astonishing. The necessity of rapidly magnetizing and demagnetizing the core in a transformer resulted in the production of a great amount of heat, and a consequent loss of electrical energy. In order to obviate this difficulty, the plates which constitutes the core were made of laminated iron, so as to suppress the Eddy currents in the core which caused the heating. This brings on a discussion of the patents in suit. The core of the Westinghouse patent is composed of thin plates of soft iron in groups having sectional openings, and separated by thin sheets of paper or other insulating material. The insulating material is so arranged as to magnetically separate the plates in pairs. The method of constructing an induction coil or transformer having a core of thin plates is disclaimed by the patentee. It is not claimed to be new in the art to arrange a transformer so as to accomplish a means of ventilation of the parts, and thereby prevent a waste of energy through heating.

"The claim is that by the arrangement of various known elements, and by the introduction of new elements, to-wit, dividing the iron into sections, and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils may be carried on, aided by oil as an insulating material, and adding an inclosing case, a new combination, producing a new and beneficial result, not before attained, is contributed to the art. The mechanical parts of the transformer are immovable and compact. They are so constructed as to enable the employment of a closed circuit of magnetic material. By this arrangement of the parts a superiority was undoubtedly obtained in durability efficiency and cheapness over prior transforming devices. The tendency of the transformers to become overheated, however, was an obstacle retarding their use for long-distance lighting, transmission of power and other purposes. It was at this period that the Westinghouse patent in suit was conceived." * * *

"*I am of the opinion that the invention of Westinghouse, consisting of a combination of elements, unless anticipated by the prior state of the art, is a distinctive step forward in the progress of electrology, in the light of the immediate recognition which it received by the public.* It does not seem to me, under the circumstances, to have been obvious to those skilled in the art." * * *

"I have given examination to such of the patents as are claimed on argument to anticipate the combinations of the patents in suit. I incline to the belief that the elements of

the patents in suit, constituting the combination for which the patents were issued, are not anticipated. * * * Many of the patents cited to anticipate the Westinghouse patent relate to patents for dynamo-electric machines and other electrical devices, including transformers. None of them points out a way to dissipate the heat, although a number of them were designed to prevent waste energy produced by heat. *In none of them is found the combination of elements contained in the Westinghouse patent in suit.*" * * *

"The point is made by defendant that, inasmuch as various claims contained in the original application filed in the patent office for the Westinghouse patent in suit were rejected by the commissioner of patents, were thereafter canceled, and substitution of other claims allowed, the patentee conceded, among other things, that open spaces between the coils were not new, nor was it new to have gas or non-conducting fluid adapted to circulate through the spaces and about the transformer. *All that may have been done by the patentee, yet a patent for a combination of old and new elements, co-operating together, was granted him by the patent office, and the presumption of patentability to which he is entitled by reason thereof has not been overcome by the defendant.* The Westinghouse patent stated that the plates are preferably separated, and that it may be preferred in some instances to surround the transformer with oil or paraffin or other suitable material. It is stated by the patent that 'the converter or transformer may be sealed in an inclosing case, and may or may not contain a non-conducting fluid or gas.' It is insisted that these are matters of preference or recommendation only, and do not constitute essential features of the patent, but this, however, must be read with claim 4 of the patent. It is quite true that a feature which is mentioned only by way of recommendation in describing an invention must usually be considered as a subordinate, and not an essential, part of the patent. Holliday v. Pickhardt (C. C.) 29 Fed. 853; Sewall v. Jones, 91 U. S., 171, 23 L. Ed., 275; Ansonia Brass & Copper Co. v. Electrical Supply Co., 144 U. S., 11, 12 Sup. Ct., 601, 36 L. Ed., 327; Krajewski v. Pharr, 44 C. C. A., 572, 105 Fed., 514. But the claim upon which complainant relies still clearly indicates the intention of the patentee to claim as essential the features described by the specifications as preferably employed.

Decree for complainant may be entered."

Opinion of the Court of Appeals in the Carbide Case.

The opinion of the Court of Appeals for the Second Circuit in the Carbide case, 117 Fed., 495-501, so far as it relates to the Westinghouse patent No. 366,362, in issue here, is as follows :

" The specification of the Westinghouse patent in suit states its subject-matter as follows :

> ' The invention relates to the construction of a class of apparatus employed for transforming alternating or intermittent electric currents of any required character into currents differing therefrom in certain characteristics. Such apparatus are usually termed " induction coils " or " converters."'

" This apparatus comprises a core of soft iron wound with two coils of insulated copper wire,—the one a primary coil, which receives and transmits the magnetic current ; the other, a secondary coil, which transforms the pressure and quantity of the current according to the purpose for which it is required. The type of transformer here under consideration is known as the 'stepdown transformer.' A current of high pressure and small volume transmitted from a distance may, by its use, be transformed to a current of low pressure and large volume, and then adapted for ordinary household uses. The object of the Westinghouse improvement is stated by the patentee as follows :

> ' The object of this invention is to provide a simple and efficient converter, which will not become overheated when employed for a long time in transforming currents of high electromotive force, and which will be thoroughly ventilated.'

" The patentee primarily proposed to obviate the serious objection of loss of energy by overheating involved in such transformation by separating the plates of the core and the primary and secondary coils from each other, so as to permit of ventilation. This construction adapted for ventilating purposes is covered by the other claims not in suit, and is not involved herein. The particular construction which is the subject of the fourth claim,—the only one involved herein,—is suggested as follows :

> ' It may be preferred in some instances to surround the converter with some oil or paraffin or other suitable material, which will assist in preserving insulation, and will not be injured by heating *This material, when in a liquid form, circulates through the tubes and the inter-*

vening spaces of the coils and plates, and preserves the insulation, excludes the moisture, and cools the converter. The entire converter may be sealed into an inclosing case, H, which may or may not contain a non-conducting fluid or gas.'

"Said claim is as follows:

'(4) The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case, adapted to circulate through said spaces and about the converter.'

"Complainant contends that this claim covers a transformer whose surfaces are cooled by means of oil circulating through said open spaces in said core and confined in said inclosing case. The first objection raised to this contention is estopped by reason of proceedings in the patent office. There the patentee, it is true, erased a claim for a combination of a converter and inclosing airtight case, and a fluid therein, which was identical with the claim in another pending application, and modified his claims for ventilating spaces between the core and the coils. *But the claim here in suit was filed with his original application, and it was never canceled or modified.* That other combinations originally claimed by him were old appears from the prior art. Converters having open spaces in the core to avoid heating were old. In the Hindley & Buffham patent of 1882 (No. 266,290), for a generator, is disclosed the arrangement of wires 'whereby openings or spaces are provided for the free circulation of air; in order to 'overcome in a great degree the generation of heat," and the patentees describe the winding of the coils 'in separate groups, so that air can freely circulate through them.' And in this patentee's earlier patent, No. 342,553, of 1886, he stated that its object was to 'construct the converter in such manner that there shall be but little loss of energy through heating the iron,' and described a core composed of thin plates 'separated from each other by intervening washers or plates of nonmagnetic material—such as vulcanized fibre—and an air space may be left, if desirable, between each two plates.' The use of oil or other nonconducting fluid to reduce the conductivity of the wire coils of a dynamo when driven at a high speed and thus reduce the heat is described in the Millar patent, No. 270,457, of 1883.

"Defendant's counsel chiefly rely on the Stanley patent No. 349,612 of 1886, for an induction coil, in which, they say, they 'have the identical combination of the fourth claim of the Westinghouse patent.' This patent is for a converter. The plates of the core are so stamped as to form interior and exterior teeth. Of the plates the specification says:

'They are placed upon each other, the positions of

the teeth coinciding; but they are insulated or separated from each other by paper, cloth, asbestus, oil silk, air, or other well known insulating material, and they are firmly bolted or otherwise secured together.'

"The specification further says:

'The coil is preferably protected by being placed within a suitable case consisting of a base F, to which there is secured a removable cover, F'. In the cover there are preferably formed perforations, *f*, *f*.'

"Although the drawings do not show open spaces in the core, and defendant's expert assumes that there are no such spaces, yet it appears from the foregoing description that the patentee conceived the idea of a separation of the plates either so as to admit air or to provide for the insertion of some fabric for purposes of insulation. The description and drawings of the Stanley patent show a base plate and perforated cover adapted to ventilate the converter and to protect it from physical injury. We have, then in the prior art every element of the combination claimed, and a physical combination of the same elements, except that the separations in Stanley are not adapted to, and the construction of the inclosing case is prohibitive of, the purposes of the claim in suit. *This claim covers such an inclosing case as will confine the nonconducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air-tight, closed converter.* Does the combination covered by the claim in suit show patentable invention? If the idea of ventilation be rejected, and the patent be confined to the statement of and claim for the inclosed construction, *it embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose.* The primitive telegraph coils of the Brooks patent of 1878 were immersed in oil 'to protect them from the influence of the damp atmosphere'; and the Miller dynamo, without open spaces in its core, had its coils suspended in a tank of oil. But the construction of these devices excluded the novel idea of oil which would 'circulate through the tubes and intervening spaces of the coils and plates.' And while the assumed or suggested separations between the plates of the Stanley patent would be sufficient for insulation only, and not for circulation, its inclosing case is not sealed so as to contain the circulating oil, and the use of oil is not suggested. *In these circumstances, the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.* If there is any

doubt upon the question of patentability, the practical and commercial results of this improvement must resolve such doubt in its favor.

"It appears that in the early history of the art only small converters were used, and the heat generated in them was dissipated by radiation into the surrounding air. But when the art began to call for converters exceeding 10 kilowatts in capacity, it was found, as stated by the expert for complainant, 'that the capacity of the transformer increased as the cube of the linear dimensions, and the heat, if the amount of loss was held stationary, would increase in like proportion, while the radiating surface would increase only as the square of the linear dimensions.' Further difficulties were encountered, resulting from the inequality of the conductivity of iron and copper. The testimony herein shows that these difficulties were so serious that for some time it was feared that the practical limit of such transformers had been reached; that experiments were made by grouping, by the use of lower current densities, by filling the cases with oil, and by subdividing the iron and copper parts of the converters by large ducts and using forced drafts. It was only when, as the result of these experiments, it was found that the oil would circulate through the ducts that any practical progress was made. Then, as complainant's expert says, 'the problem of making large units became greatly simplified. It became only necessary to so subdivide the coils and iron so as to expose a uniform surface as compared with the losses in the transformer in all sizes, and to provide a case having sufficient external surface to enable the oil again to give up its heat to the surrounding air, to make transformers of any desired capacity.' *The practical result of the invention in suit, as testified to by complainant's experts, was to so increase the capacity of converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts,*" * * *

"The decree is affirmed as to patent No. 366,362." * * *

The Matters and Things Found and Decreed in the Carbide Case.

From the pleadings in the case at bar and opinions of the Circuit Court and Court of Appeals in the Carbide Case, we find that among "the matters and things *found and decreed* in said suit against Union Carbide Company," by which Re-

spondent admits that it is bound (see Answer, Rec., pp. 10-11), are the following by the Circuit Court:

(1) That the letters patent in suit are good and valid.

(2) That George Westinghouse, Jr., was the inventor of the invention claimed by claim 4 of said letters patent.

(3) That the defendant in that case, which had *used* transformers precisely like the one illustrated at page 108 of this record, which were made and sold to it by Wagner Electric Mfg. Co. (Respondent), had infringed claim 4 of said patent.

(4) That "by the arrangement of various known elements, to wit, dividing the iron into sections and separating the coils, thereby increasing the surface over which heat dissipation in the core and coils may be carried on, aided by oil as an insulating material, and adding an inclosing case, a new combination, producing a new and beneficial result, not before attained, is [was] contributed to the art", by Mr. Westinghouse.

(5) That said "invention of Mr. Westinghouse, consisting of a combination of elements, is a distinctive step forward in the progress of electrology."

(6) That "the maximum of large-size, dry transformers—transformers without sectional openings in the core and without the use of oil as an insulating material—is 10 kilowatts, or 13 to 14 horse power, while that of the large-size transformers of the Westinghouse patent in suit is 500 kilowatts, or from 650 to 700 horse power."

(7) That in none of the devices of the prior art "*is found the combination of elements contained in the Westinghouse patent in suit*" and claimed by claim 4 thereof.

The following are among the things *found* by the U. S. Court of Appeals for Second Circuit in the Carbide Case, confirming the things *found* and *decreed* by the Circuit Court in that case:

(8) That "the claim here in suit [claim 4] was filed with the original application, and it was never cancelled or modified."

(9) That claim 4 is for a new and most useful invention.

(10) " This claim covers such an inclosing case as will confine the non-conducting fluid, and such open spaces in the core as will permit the circulation of the liquid through them. Westinghouse, then, was the first to patent such an air tight, closed converter."

(11) " It embodies at least a combination radically modified from those of the prior art, in order to adapt it to a novel purpose."

(12) " In these circumstances the patentee seems to be entitled to claim the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air."

(13) " The practical result of the invention in suit " * * * " was to so increase the capacity of the converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts."

These things, found and decreed in the Carbide Case, must then be taken as established, incontrovertible facts in the case at bar, not only in legal effect, but also by virtue of the express admissions in Paragraph VI. and VII. of the Answer, and binding upon Respondent as admitted in Paragraph VIII. of the Answer, as follows:

" This defendant admits that the device involved in said suit and used by the Union Carbide Company, the defendant therein, was manufactured and sold by this defendant, and that said suit against the said Union Carbide Company was defended by this defendant and was argued by its counsel, and that the matters and things found and decreed in said suit against the Union Carbide Company are *res adjudicata* against this defendant."

Therefore, this Respondent was forever estopped from denying the truth of any of these " *matters and things found*

and decreed in said suit against Union Carbide Company," and cannot be relieved of this estoppel at any stage of this case, not only as to every matter which was offered and received to defeat the claim or demand, but as to any other admissible matter which might have been offered for that purpose. Cromwell v. County of Sac, 94 U. S., 351. See, also, Southern Pacific Railroad Co. v. United States, 168 U. S., 1, and David Bradley Mfg. Co. v. Eagle Mfg. Co., Court of Appeals for the 7th Circuit, 57 Fed., 991.

Respondent having also admitted by its Answer (Paragraph IX., Rec., p. 13), that it had, "since the 12th day of July, 1887, and subsequently to the assignment to the complainant, within the Eastern District of Missouri and elsewhere throughout the United States, made and sold devices or apparatus which embody the invention or discovery claimed in claim 4 of said letters patent," *there was no contest in this case as to the infringing transformers and the decree was accordingly entered as to them.*

The contests in the Circuit Court, resulting in an opinion by Judge AMIDON on contempt proceedings and by Judge ADAMS at final hearing all related to the later "Type M" transformer, which was not involved in the accounting.

Respondent Is Estopped to Contend That Claim 4 in Suit Is a Limited Detailed One.

Claim 4 in suit is the only claim of the patent which is for the electrical converter, combined with an inclosing case and a non-conducting fluid, such as oil, as an entirety. Claims 1, 2, 3 and 5 not in issue here are claims which relate to precise details of construction of the converter alone. Claim 4 is as follows:

"The combination, substantially as described, of an electric converter constructed with open spaces in its core, an inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter."

This claim is for a new combination of elements which produced a result never before accomplished, making it pos-

sible to increase the capacity of the electrical converter from 10 kilowatts, or 13 to 14 horse power, to 500 kilowatts, or 650 to 700 horse power. This result was due to the invention of said claim 4, because for the first time in the art, as found by the Court of Appeals in the Carbide Case, it disclosed and claimed "the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of the oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air." In the language of this Court in Elizabeth vs. Pavement Company, 97 U. S., 141, this invention "*was a complete thing, consisting of a certain combination of elements, and the defendant* [in the infringing transformers] *used it as such—the whole of it.*"

We desire to lay emphasis on the fact that the invention of claim 4 did not reside in any particular feature or element mentioned in that claim, but in *the combination* defined in that claim *as an entirety.* This was one of the things found in the Carbide Case, by which the Respondent in this case is admittedly bound, and it was in pursuance of such finding in the Carbide Case, the admissions as to the binding effect of the findings in the Carbide Case, and the admissions as to infringement in the case at bar, that the interlocutory decree in the case at bar was entered. The Respondent not having appealed from the interlocutory decree of February 16, 1904, granting an injunction and an accounting, cannot be heard to contend that the invention of claim 4 of the patent in suit is anything other than what it was defined to be by the Court in the Carbide Case.

Hubbard v. Todd, 171 U. S., 474.
French Republic v. Saratoga Vichy Co., 191 U. S., 427, 440.

A cardinal error made by the majority of the Court of Appeals is that they not only failed to appreciate the true character of the invention of claim 4, but that they also failed to keep in mind the binding effect on the Respondent, on this Record, of the nature and scope of this invention of claim 4, as found and defined by the Court of Appeals in the Carbide

Case. For instance, the majority of the Court of Appeals said:

"The patented device, covered by claim 4, being, as we view it, a limited detailed claim and not being generally for a circulatory system throughout the heat-producing parts of the transformer, and the appellee's infringing transformer embracing something of value not covered by that claim, viz.: open spaces between the coils and between the coils and the core, we are of opinion that the appellant whose patent covered only part of the infringing device is not entitled to recover all the profits made by the appellee, but only such as resulted from the patented invention."

Now, the trouble with this statement, which constitutes one of the premises which led the majority of the Court of Appeals to the erroneous conclusion as to the non-recovery of profits, is that the invention of claim 4 was not defined by the Court of Appeals in the Carbide case as a limited detailed claim, and hence the majority of the Court of Appeals were not warranted in treating it as such; at least, *so far as the infringing converters were concerned.*

In Leeds & Catlin Co. v. Victor Talking Machine Co., 213 U. S., 318, 319, this Court, speaking of a claim of this character—a claim for a combination of elements co-operating to form a new structure—said:

"Claims are independent inventions." * * *

"A combination is a union of elements, which may be partly old and partly new, or wholly old or wholly new. But whether new or old, the combination is a means—an invention—distinct from them. They [the separate elements] if new, may be inventions and the proper subjects of patents, or they may be covered by claims in the same patent with the combination.

"But whether put in the same patent with the combination or made the subjects of separate patents, they are not identical with the combination. To become that they must be united under the same co-operative law. Certainly, one element is not the combination nor in any proper sense can it be regarded as a substantive part of the invention represented by the combination, and it can make no difference whether the element was always free or becomes free by the expiration of a prior patent, foreign or domestic. In making a combination an inventor has the whole field of mechanics to draw from."

In Leeds & Catlin Co. v. Victor Talking Machine Co., 213 U. S., 325, 332, this Court held:

"A combination is a composition of elements, some of which may be old and others new, or all old or all new. It is, however, the combination that is the invention, and is as much a unit in contemplation of law as a single or non-composite instrument."

Furthermore, to find that claim 4 is a limited detailed claim and not generally for a circulating system throughout the heat-producing parts of the transformer is to completely ignore the nature and scope of the claim for a combination of elements forming, by their union and co-operation, a new thing as an entirety, accomplishing results impossible with prior structures, and revolutionizing the art.

In the case of Expanded Metal Co. v. Bradford, 214 U. S., 366, 381, this Court said:

"There is nothing in the prior art that suggests the combined operation of the Golding patent in suit. It is perfectly well settled that a new combination of elements, old in themselves, but which produce a new and useful result, entitles the inventor to the protection of a patent. Loom Company v. Higgins, 105 U. S., 580–591.

"To our minds, Golding's method shows that degree of ingenuity and usefulness which raises it above an improvement obvious to a mechanic skilled in the art, and entitles it to the merit of invention. Others working in the same field had not developed it, and the prior art does not suggest the combination of operations which is the merit of Golding's invention."

To the same effect is Cantrell v. Wallick, 117 U. S., 694, in which this Court says:

"So a new combination of known devices, whereby the effectiveness of a machine is increased, may be the subject of a patent. Loom Co. v. Higgins, 105 U. S., 580."

In Loom Co. v. Higgins, 105 U. S., 591–2, this Court, after laying down the general rule that a new combination of known elements producing a new and beneficial result is patentable, said, with respect to the fifth claim of Webster's patent (a claim for a combination of elements and the only claim of Webster's patent in issue):

"It is certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced

more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent."

In the case at bar, a finding of the Circuit Court in the Carbide case was that the combination of claim 4 was "a distinct step forward in the progress of electrology, in the light of the immediate recognition which it received from the public." And the Court of Appeals in the Carbide Case found, in respect to this very combination, that

"The practical result of the invention in suit, as testified to by complainant's experts, was to so increase the capacity of converters that, while a dry converter, cooled by the natural circulation of air, is limited to 10 kilowatts, the oil-insulated converters of the patent in suit are commercially serviceable up to 500 kilowatts."

And Mr. DENISON, the Master, in his report said (Rec., p. 288):

"While it is true that most, if not all, of the elements of the patented combination of Claim Four were old, yet it is also true that these elements as combined in Claim Four constituted an entirely new and novel structure, a transformer complete in itself, introducing a new principle of operation producing novel results of the greatest value, which had never before been obtained in a transformer, *increasing by five thousand per cent. anything hitherto attained in that line*, which practically revolutionized the application of electric energy to mechanical uses; and for which no substitute or mechanical equivalent appears to have been found during the entire period covered by the inquiry."

Thus we see that it is not correct to say that claim 4 is a limited detailed claim covering only part of the infringing device, when we consider the results achieved and the decisions of this Court to which we have referred, notably in Loom Co. v. Higgins. Furthermore, even if the claim were a limited detailed claim, *Respondent has used that limited detailed claim in every one of its 6,524 infringing transformers*, and it is precisely the combination of that claim which received at once recognition by the public, as the Circuit Court and Court of Appeals found in the Carbide case. So that, if it be assumed that the Court of Appeals was right in hold-

ing that the claim did not cover Respondent's Type M converter, yet in view of Respondent's absolute appropriation in the infringing converter of Petitioner's invention to its narrowest features, and of the estoppel arising on this record, the Master's finding should be sustained.

But in view of the estoppel arising on this record, the Court of Appeals was precluded, on the accounting feature of this case, from holding that the invention of claim 4 was not a broad and primary improvement, but was bound by the finding of the Court of Appeals in the Carbide Case, that claim 4 was for "*the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled, by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air.*"

Therefore, in so far as the majority of the Court of Appeals found that the invention of claim 4 was not "a circulatory system throughout the heat-producing parts of the transformer," and so far as that finding may have influenced its conclusion resulting in setting aside the Master's report, that finding was unlawfully made, being directly contrary to a matter which had been prejudged and settled by the decision of the Court of Appeals of the Second Circuit in the Carbide case, by which this Respondent was legally and admittedly bound.

THE ACCOUNTING.

The record shows (Rec., pp. 303–305) that Respondent made and sold 6524 infringing transformers, which were all of similar construction to those described in said stipulation on pages 14, 15, of the Record, and to the one illustrated at page 13 of the article in "American Electrician," reproduced at page 108.

The accounting had before the Master was limited to six years before filing of the bill, in pursuance of Section 4921 of the Revised Statutes of the United States, as amended in 1897.

That this matter may be clearly understood, we here reproduce in full the stipulation between the parties to this suit which was used in making up the record for the U. S. Court of Appeals for the Eighth Circuit, which stipulation appears on pages 1-3 of the record:

Stipulation.

"In order to save the printing of 'two volumes comprising the tabulations from the books of the defendant' taken before the Master and compiled under his directions, which two volumes are referred to towards the close of the Master's report in this case, which Master's report was filed in the United States Circuit Court on July 9, 1907, it is stipulated and agreed between counsel for appellant and counsel for the defendant:

"That said two volumes of tabulations contain a list of more than six thousand transformers sold by the Wagner Electric Manufacturing Company, appellee, from and after June 24, 1896, up to and including November 14, 1901, being a list of transformers manufactured and sold by the Wagner Electric Manufacturing Company, appellee and defendant, *each of which transformers embodies in its construction the invention claimed by the fourth claim of the Westinghouse patent in suit No. 366,-362, dated July 12, 1887, being infringing transformers manufactured and sold by the defendant*, and which are the transformers referred to in the Master's report in this esse, and concerning which transformers the Master in this case was ordered to take and state an account by the interlocutory decree entered in this cause by the Circuit Court on the 16th day of February, 1904. Said two volumes of tabulated statement of infringing transformers made and sold by the Wagner Electric Manufacturing Company from and after June 24, 1896, up to and including November 14, 1901, which it is stipulated need not be printed as part of the record of the Court of Appeals in this case, is the tabulation from the defendant's books presented and filed before the Master on September 7, 1904, and is the same tabulation, record or report thereafter referred to by Waldo H. Layman, one of defendant's witnesses in his testimony taken in this case. And that, as said defendant's witness, Waldo H. Layman, admits in questions and answers 84 and 85 of his testimony before the Master, said tabulated report or statement covers all transformers made and sold by the Wagner Electric Manufacturing Company from and after June 24, 1896, up to and including November 14, 1901, *which transformers embody in their construction the invention claimed by claim 4 of the Westinghouse patent in suit*, No. 366,362, dated July 12, 1887.

"That said record or tabulated statement of infringing

transformers in two volumes and referred to in the last part of the Master's report, is made up of a list of defendant's infringing transformers covering the period specified above, that is, between June 24, 1896, and November 14, 1901, containing the factory number of the order for each transformer, name of customer, residence of customer, date of sale, number of transformers in each sale to each customer, price of each transformer, total price to customer for each sale, and net price received.

"That on the last page of said report is a tabulated statement concerning Union Carbide transformers referred to in the Master's report, which record shows that on December 7, 1898, the Wagner Electric Manufacturing Company, appellee, sold to the Union Carbide Company of Niagara Falls, New York, as order No. 'A 2069,' nine transformers, receiving for the same the sum of $15,460.00.

"That in the following schedule given by appellee's witness, Waldo H. Layman, in answer to question 135 of his testimony before the Master, the figures under the heading 'Proportion of business involved in the record of this inquiry' represent the amount received by the Wagner Electric Manufacturing Company, for the years 1896, 1897, 1898, 1899, 1900, 1901, beginning with June 24, 1896, and ending with November 14, 1901, for the infringing transformers listed in the said two books of tabulations from the books of the defendant company relating to infringing transformers manufactured and sold by Wagner Electric Manufacturing Company between June 24, 1896, and November 14, 1901:

Year.	Total Volume Company's Business.	Proportion of Business Involved in the Record of this Inquiry.	Total Profits of the Company on all Kinds of Apparatus.	
1896	$238,122.35	$65,601.82	Profit	$20,707.33
1897	226,096.46	128,244.12	Loss	21,743.38
1898	343,494.76	148,542.29	Profit	62,592.12
1899	411,337.74	235,335.78	Profit	58,382.67
1900	515,013.32	230,732.67	Loss	12,277.57
1901	580,710.10	146,815.08	Profit	40,318.90.'

"That the sum of the various amounts in the first column of the above tabulation is the $2,314,774.75 referred to by the Master at page 42 of his printed report as found in the transcript of this record; the sum of the various amounts in the second column of the above tabulation is the $955,271.76 referred to by the Master on said page of his report; and the *arithmetical* sum of the various amounts in the third column of the above

tabulation is the $182,001.02 referred to by the Master on said page of his report.
July 23rd, 1908.

Notwithstanding the fact that each one of the 6524 infringing transformers embodied, as an entirety, the invention of claim 4 of the Westinghouse patent in suit; notwithstanding the fact that claim 4 was for the converter or transformer as an entirety; and notwithstanding that the Master found that your petitioner was entitled to recover from the respondent, as *profits* made by it, the sum of $132,433.25; nevertheless, in direct contravention of the decisions of this Court in strictly analogous cases, the majority of the Court found that your Petitioner was "*entitled to nominal damages only on account of the infringing device.*"

PETITIONER ENTITLED TO RECOVER RESPONDENT'S ENTIRE PROFITS ON THE INFRINGING CONVERTER.

As we understand it, the essential ground upon which the majority of the Court based its conclusion is stated in the last paragraph but one of the majority opinion, and is in these words (Rec., p. 591):

"Here the appellant failed to prove by reliable or tangible evidence that the entire value of the infringing transformer as a marketable article was properly and legally attributable to appellant's patentable combination embodied therein, and so, in the light of the decisions above cited, and many others, which we have examined, announcing the same rule, we think that the appellant is entitled to recover nominal damages only; in other words, that as part only of the profits made by the appellee are attributable to the appellent's combination, the balance being attributable to the presence in the infringing device of elements not included in that combination, and as the appellant failed to make proof of how much of the total profits was due to the presence of its combination in the infringing device, there is nothing upon which more than a nominal recovery could be grounded."

To reach this conclusion, the majority of the Court completely disregarded many of the findings of fact contained in

the Master's report (Rec., pp. 285 and 287) including the following, viz.:

"7. That the entire commercial value of the infringing transformers so manufactured and sold by defendant, at and during the time concerned in this accounting, was due to the combination described in Claim Four of the Westinghouse patent."

As to this Judge SANBORN said (Rec., p. 596):

"Without the complainant's combination whereby the oil was circulated in a sealed case through the intervening spaces of the coils and plates and around the converter the defendant never could have used or sold one of its infringing converters."

The explanation of this difference of opinion, of course, is found in the different construction given by the majority of the Court of Appeals to Claim 4 from that given by the Master and Judge SANBORN; the former holding that the claim was limited to the transverse open spaces between the groups of core plates and did not include the longitudinal openings in the core between the coils, which were also specified in the patent, and between the coils and the inner edges of the core plates, which were not specified in the patent; while the latter held that the claim was broad enough to cover the open spaces in the core wherever located.

When the majority opinion refers "*to the presence in the infringing device of elements not included in that combination*" it means to say that each of said infringing transformers had present in it not only the combination, as an entirety, of claim 4 of the Westinghouse patent, but also had a feature not specifically claimed in the patent, *i. e.*: open spaces between the coils and the core. This feature, if present in the infringing transformer, was no departure from the invention of claim 4, which the Court of Appeals in the Carbide case, defined, as: "*the means by which the external and internal surfaces of the heat-producing parts of a converter were cooled by such an arrangement and separation of parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces, whereby the heat from the oil radiated to the surrounding air,*" but was quite within the spirit of the invention, being, at most, merely an additional separation of parts

for the circulation of oil through the core. The majority opinion does not say that these transformers were not infringements of claim 4, but that because they also had additional spaces for the oil to circulate between the parts, and because your petitioner "*failed to make proof of how much of the total profits*" *made by the Respondent was due to that feature, ergo,* your Petitioner is entitled to recover nothing but nominal damages. This is directly contrary to the rule laid down by this Court in Elizabeth v. Pavement Co., 97 U. S., 141.

We think it is quite clear that the evidence is ample to support the Master's finding. The Respondent did not question the fact that the limit of capacity of the prior air-cooled and insulated converter, or, as it is called, the dry converter, was 10 kilowatts, and indeed, in view of the estoppel based upon the Carbide case, it could not do so. There is no evidence in the case of the use of any converter *not having open spaces in its core,* with oil and an enclosing case. No such structure existed in the prior art. Respondent's evidence of lack of utility of the combination of claim 4 was based upon a comparison between Respondent's infringing converter and Respondent's Type M converter. But as we have before explained, the latter was merely a later and equivalent form of Petitioner's invention.

It would be impossible to apportion the profits due to the slight spaces between the coils and the inner edges of the core plates in Respondent's infringing converter. If there was any additional advantage in their presence it was due to a mere natural and mechanical extension of the fundamental idea of the Westinghouse invention, a difference of degree and not of kind, so insignificant as compared with the large transverse spaces in the core and the spaces between the coils, which Respondent slavishly copied from the Westinghouse patent, that it could have no effect upon the value and saleability of the infringing converter.

Take the case by and at large, it is obvious that Respondent could not have sold its transformers without the use of the patented combination. There was no market for the dry 10 kilowatt transformers of the prior art.

The Burden of Proof Was on Respondent to Show What Profits, if Any, Were Due to the Additional Spaces.

It would have been impossible to have shown what proportion of the Respondent's profits were due to the fact that the infringing transformers, in addition to embodying the open spaces shown and described in the patent, also had, in harmony with the invention, spaces between the coils and the core, thus providing additional separation of the parts for the circulation of the oil; but, as a matter of law, this Court has decided, in Elizabeth v. Pavement Co., 97 U. S., 141, that where the defendant has used the complainant's invention as an entirety, plus some additional feature, the complainant is entitled to recover all the profits made by the defendant, *unless the defendant itself show what proportion of the profits made by the defendant in the sale of the infringing structures were due to this additional feature.* In other words, that the burden of proof, under such circumstances, is on the defendant and not on the complainant, to show what proportion of the profits made by the defendant were due to such additional feature. The Court said:

"The Nicholson pavement was a complete thing, consisting of a certain combination of elements. The defendant used it as such—the whole of it. If they superadded the addition made to it by Brocklebank & Trainer, *they failed to show that such addition contributed to the profits realized. The burden of proof was on them to do this.*" See Elizabeth v. Pavement Co., 97 U. S., 141.

To the same effect see Hurlbut vs. Schillinger, 130 U. S., 456, 472; Crosby Valve Co. v. Safety Valve C., 141 U. S., 454; Root v. Railway Co., 105 U. S., 203.

Not only is the majority opinion in direct conflict with the decisions of this tribunal in Elizabeth v. Pavement Company and other cases just cited, but with the rule applied by the U. S. Circuit Court of Appeals for the Sixth Circuit in Brennan Co. v. Dowagiac Mfg. Co., 162 Fed., 475, and by the U. S. Circuit Court of Appeals for the Seventh Circuit in Orr & Lockett Hardware Co. v. Murray, 163, Fed., 55, where the

latter, following and referring to Elizabeth v. Pavement Co., says :

" Where profits are made by an infringer, by the use of an article patented as an entirety, the infringer is responsible to the patentee for the whole of such profits, unless he can show *—and the burden is on the infringer to show it*—that a portion of such profits is the result of some other thing used by him."

But Respondent did not allege, or offer any evidence to prove, that the additional spaces were of any value, or that any of the profits resulted therefrom. On the contrary, it offered testimony to show that open spaces between the core and coils, crippled the coils and reduced their effectiveness (Nipher, Rec., p. 39, Q. 8) ; hence, so far from being of value and a source of profit, such spaces were actually detrimental, and Respondent could not prove that they were a source of profit. Respondent was able to sell its infringing converters in spite of their impairment, by reason of the presence of the Westinghouse invention therein, and hence Petitioner is clearly entitled to all of its profits therefrom.

CONFUSION OF PROFITS.

Under the decisions of this Court, where the infringer has confused the profits made in the manufacture and sale of the infringing article with the general profits of his business, the Master is warranted in estimating the profits to which complainant is entitled. And in estimating profits made by an infringer a compensation is gran ed " computed and measured by the same rules that courts of equity apply to the case of a trustee who has wrongfully used the trust property for his own advantage."

Tilghman vs. Proctor, 125 U. S., 148.
Root vs. Railway Co., 105 U. S., 189, 214, 215.
Central Natl. Bank vs. Connecticut Mut. Life Ins. Co., 101 U. S., 54.
The Idaho, 93 U. S., 575, 585, 586.
Rubber Co. vs. Goodyear, 9 Wall., 802, 803, 804.
Callaghan vs. Myers, 128 U. S., 617, 665, 666.
Manufacturing Co. vs. Cowing, 105 U. S., 255.

Within the period covered by the accounting Respondent made and sold 6,524 transformers, which embodied, as an en-

tirety, the invention of claim 4, thus recognizing, as the Courts found in the Carbide case, that the public had theretofore recognized, the great merit of this invention. Respondent profited by the manufacture and sale of these infringing transformers, but confused such profits with the general profits of its business. The Master, who had the advantage of hearing the testimony of the witnesses, noticing their behavior on the stand, etc., found, among other things (Rec., pp. 286-287) :

That Respondent had merged the profits made by it on the infringing transformers with the profits of its entire business, so that, as shown by the testimony, it was unable to separate such profits (Finding 10).

That Respondent claimed that it did not know and could not furnish the cost of manufacturing the infringing transformers, nor even an estimate thereof (Finding 12).

That the business of Respondent as to the manufacture of the infringing transformers was so intermingled with its other and general business, that approximate results only were possible, in estimating the profits (Finding 13).

That the profits of Respondent from the manufacture of its infringing transformers, as nearly as it could be reached by estimates, comparisons and apportionment, was approximately 25% on the net amount of sales on the infringing transformers (Finding 16).

The Testimony Before the Master.

That the Master was warranted in estimating the profits made by Respondent in the sale of its infringing transformers is clear from the evidence. Petitioner began taking its proofs before the Master on June 29, 1904 (Rec., p. 302). The Petitioner had to go into the camp of the enemy and call WALDO A. LAYMAN, General Manager and Treasurer of the Respondent Company (Rec., p. 302).

It developed in the examination of Mr. Layman, who claimed to be intimately acquainted with all the affairs of Re-

spondent during the period covered by the accounting, that since June 24, 1896, the Respondent had made and sold 6,524 infringing transformers, each of which embodied in its construction the invention of claim 4 (Rec., pp. 304-305). The witness not having all the necessary data before him at the first hearing, the hearing was adjourned to July 12, 1904 (Rec., p. 308). At every stage of the inquiry Petitioner had to contend with the reluctance, evasion and hostility of the witness. At the session of June 29, 1904, he was requested to produce a transcript from Respondent's books of original entry in respect to the infringing transformers sold by Respondent since June 24, 1896, giving the names and places of residence of the parties to whom such transformers had been sold, the price of the said transformers, etc. At the session of July 12, 1904, the witness produced a list of these infringing transformers, but did not give all the data asked for at the session of June 29, 1904 (Rec., p. 312).

At the session of July 13, 1904 (Rec., p. 316, etc.), following the instructions of the Master, the witness produced certain card records which were supposed to show the number of transformers sold by the Respondent since June 24, 1896, but it becoming apparent that it would unduly lengthen the examination to go into each of these cards, and that they gave no data in regard to the cost of these infringing transformers, but merely the name of the customer, the date of sale and the price received (Rec., pp. 318, 319, 323), the witness was requested to prepare and produce at a later session a complete transcript of all infringing transformers sold by Respondent since June 24, 1896, giving both the gross amount of each sale and the net amount received by the Respondent for each infringing transformer (Rec., pp. 323, 324). In order that this might be done an adjournment was had to July 20th, and from time to time various adjournments were had until September 12, 1904—nearly two months afterwards—when witness produced a statement supposed to cover the infringing transformers sold between June 24, 1896, up to November 14, 1901. This statement is covered by the stipulation found at pages 1, 2 and 3 of the record. When Mr. Layman was interrogated in regard to it (Rec., p. 326) he admitted that it did not include the nine transformers sold by Respondent to the Union Carbide Company; they were afterwards added to the list. As

appears in the stipulation (Rec., p. 2) Respondent received $15,460 for them; seven of them were of 1,500 kilowatts capacity each, and two of 750 kilowatts each (Rec., p. 332, Qs. 105–108). The list of infringing transformers stops with November 24, 1901, because then the news of Judge HAZEL'S decision in the Carbide Case reached Respondent (Rec., p. 328), from which time Layman claims Respondent stopped selling the infringing transformers. Judge HAZEL'S opinion was filed November 11, 1901 (see 112 Fed., 417).

Layman said (Rec., p. 329), in answer to Q. 85, that "the report covers all transformers sold in that time *which utilized or used the Westinghouse patent.*"

Further examination, beginning with Q. 96 (Rec., p. 330 to the top of page 332) shows that up to that time Layman had accounted merely for the gross amount received by Respondent on the "infringing business," but had not shown the cost of making these infringing transformers, and hence failed to show the actual profit made on the infringing business.

In order to ascertain the profits (Rec., p. 332) Layman was asked about the cost of making the infringing transformers, and told the following significant things, which become all the more significant in the light of the subsequent testimony before the Master: In answer to Q. 111 (Rec., p. 332), he said that Respondent's books do not show the cost of manufacturing the infringing transformers. In answer to Q. 112, he said that this information *could only be given by himself*, and that he could not make a positive statement without further examination.

By Q. 113, He was asked whether he is in position to ascertain from the books of the Respondent, from which the transcript of infringing transformers was made, "*or otherwise*," the cost of manufacturing the transformers accounted for, and answered that he could only determine that by reference to the books of the company.

In answer to Q. 114 he said that in fixing the selling price of the infringing transformers it was usual for the Respondent to approximate the cost of manufacturing the same; and he also says (Qs. 116, 117), that it had been the practice of the Respondent to make from year to year figures showing the cost of manufacturing the various sizes and types of infringing transformers, and that these figures were used for fixing the selling price.

All of Layman's testimony on this question which appears between pages 332 and 335 of the record is especially interesting in the light of further developments; but it is important to note that he evidently was in position to ascertain from the books of the company "*or otherwise*," the cost of manufacturing the various infringing transformers accounted for.

Layman was then asked by Petitioner's counsel and ordered by the Master (Rec., p. 334), to produce at the next session a summary from Respondent's books, which would show separately the cost of labor and material entering into each infringing transformer, and also separately any other element of cost which might enter into the production of the same, so that Petitioner might be able to ascertain the profits. This was done at the session held September 26, 1904 (Rec., p. 334). Afterwards, on October 17, 1904, twenty-one days later, he appeared and told the Master (Rec., p. 335, Qs. 130–134), that he was not able to prepare such a record, because he could not get the information from Respondent's books. He then produced the vague, general statement found at page 335 of the record. This statement purports to cover the years 1896, 1897, 1898, 1899, 1900 and 1901. In one column is given the "Total volume of company's business" for each of these years; in another the "*Proportion of business involved in the record of this inquiry*"; and in a third "*Total profits of the Company on all kinds of Apparatus*," which shows a large profit on Respondent's business for four years and a loss for two years.

In connection with this statement (Rec., p. 335) Layman said that he was not able to give any data from which the cost of manufacturing the infringing transformers, or the profits made thereon, could be ascertained; and in answer to Q. 134 (Rec., p. 335), which should be taken in connection with Q. 113 (Rec., p. 332), he said that he wished to be understood as stating that he had carefully examined the books of the Respondent and he has not been able to ascertain therefrom, "*or otherwise*" (Q. 113), the information called for.

This was all the satisfaction as to the cost of manufacturing the infringing transformers and the profits made thereon by Respondent, that Petitioner could get from Respondent's

Treasurer and General Manager, who testified (Rec., p. 332, Q. 112) that he was the only person connected with the Respondent who could give this information.

Respondent's counsel, evidently being satisfied with the then situation, declined to cross-examine Layman (Rec., p. 336). Matters being left in this unsatisfactory situation, and it appearing from the testimony of Layman, that there was no way of ascertaining the cost of manufacture of Respondent's infringing transformers or the profits made by Respondent, and that the profits on the infringing transformers were commingled with the profits of Respondent's general business, Petitioner was compelled to have recourse to other evidence, and in February 1905, called Svend E. Johannesen and Theodore R. Foster. Johannesen had been in the employment of the Respondent from July 1893, to September 1902 (Rec., p. 338, Qs. 3-4) covering all of the period covered by the accounting in this case, and Foster from September, 1896, to May, 1892 (Rec., p. 370, Q. 8). In the light of the testimony of Layman (Rec., pp. 332-335), all the testimony of Johannesen and Foster (Rec., pp. 338-384) is interesting and instructive. We can only refer to it briefly here.

Svend E. Johannesen (Rec., p. 338), an experienced electrical engineer, testified that he had known Layman since 1892; that he had read his testimony which had been taken before the Master (Rec., p. 339); that during the time accounted for and when these infringing transformers were being made and sold by Respondent (that is, from June 24, 1896, up to and including November 19, 1901), he was in the employment of the Respondent as engineer in charge of the transformer department (Rec., p. 339, Qs. 8-9). That during that time his duties required him to get up the cost of the transformers; that the costs were very carefully made up in every detail, and that every item connected with the manufacture and with the material contained in the transformers, was included in these costs (Rec., p. 340, Q. 10). On this point he said, in answer to Q. 11 (Rec., p. 340):

"Under the subject of labor, every operation was itemized under a separate heading. For instance, various operations of the transformer are the winding of the coils, the cutting

and annealing of the iron, the process of insulation, the mounting of the transformer—which is the same as building on of the iron, the boxing of the transformer, the packing of the transformer and so on. Under material, every item, was similarly considered, such for instance, as the copper contained in the coils, the iron contained in the core, the case, the various forms of insulation used, the terminal cables and so on."

Johannesen said (Rec., p. 340, Qs. 13, 14) that this data was put in tabulated form, as a rule in manuscript, but sometimes in tracings so that they could be duplicated by blue-prints. He produced two of these blue-prints, which are reproduced opposite page 576 of the record. They show every detail of cost entering into the cost of transformers, even to boxing and packing the same for shipment. One of the blue-prints is dated June 26, 1900, and the other July 31, 1900. They are merely samples of the cost records of Respondent during the time covered by the accounting, showing the very exact custom of compiling the cost of these transformers which prevailed with the Respondent while Johannesen was in its employment, and corroborating his testimony as to the existence of such custom and records (Rec., p. 364, Q. 97).

Johannesen also said that it was the practice of the Respondent to add to the flat cost of labor and material, from 25 per cent. to 40 per cent. to cover salaries of officers, engineers and all other expenses connected with the manufacture of the transformer (Rec., pp. 342-343).

In answer to Q. 22 (Rec., p. 342) he defines *factory cost* as follows :

" The factory cost of the transformer is made up of two elements the first being the flat labor and material values and including the actual cost of labor and material involved in the transformer. Second, the expense value, which included the salaries of officers, of engineers and of other employees not included in the flat values, and all other expenses connected with the manufacture of the transformers."

It is interesting to note that the drawing of June 26, 1900, opposite page 576 of the record, bears upon it in the shape of a note reference to the fact that 40 per cent. has been added to the sum of material and labor, plus some other items, such as cost of strips 21c., cost of castings 5c., cost of sheet iron 4½c.,

cost of wire "market price." In the same way we find that on the other drawing these various items are added, but in the latter case the note state: "These costs are without percents added."

Johannesen also said (Rec., p. 344):

"During the time that I was connected with the Wagner Company it was customary to make a record of the manufactured stock and the apparatus contained in the manufactory for the purpose of arriving at the condition of the amount of business done during six months, and these records were taken the 1st of January and the 1st of July every year. The Wagner Company always had a stock of transformers on hand which more or less covered the full line of apparatus manufactured by them; and in working up these inventories it was necessary to price the transformers at their factory costs."

And in answer to the question (Rec., p. 343, Q. 29) whether it would be possible to ascertain the cost of transformers from the records of the Wagner Company, he said:

"*It should be possible to ascertain these costs.* If the original tabulated sheets had been destroyed, they could arrive at the cost of practically every transformer which appears on the transcript referred to *by referring to the inventories* of the years included in the same."

As to the practice of Respondent in fixing the selling price of transformers during the period of accounting, Johannesen (Rec., p. 351, Q. 56) said:

"During the period in question they had a rule, which was used as a base in order to arrive at the selling price, and this rule was the addition of 25 per cent. to the factory cost of production."

In other words, over and above adding from 25 per cent. to 40 per cent. to the cost of flat labor and material, to cover all contingencies as to cost of manufacture, in fixing the selling price it was the rule for Respondent to add 25 per cent. to the sum of the cost thus estimated. This 25 per cent. represented the margin of profit.

THEODORE R. FOSTER (Rec., pp. 369–384), who was assistant to Johannesen and occupied various positions in the transformer department during the period accounted for, confirms in every detail and respect the testimony of the latter.

On June 1, 1901, Foster was the only employe authorized to make prices to the sales department. [See letter of Schwedtmann dated June 1, 1901, Rec., p. 378, and letter of Layman dated August 6, 1901, Rec., p. 376, Q. 49.]

As to the practice of Respondent in the matter of ascertaining the cost of transformers, Foster said (Rec., p. 371, Q. 15) :

" The various items which go to make up the various transformers,—the various sizes of transformers, were carefully priced, and after adding together all items occurring under labor plus all items occurring in the material, the result gave, in all cases the cost of the different sizes of transformers."

and in answer to Q. 17 :

" After the flat cost of labor and material had been ascertained, the practice was to add a certain percentage to cover the fixed expenses of the Company, including salaries, selling expenses, &c. This percentage varies, within certain limits, from approximately 25 per cent. to 40 per cent. During the last two years approximately, that I was with the Wagner Company, I can state positively that the percentage added to flat labor and material was 40 per cent."

As to the practice of Respondent in making up the selling price of transformers, Foster said (Rec., p. 371, Qs. 19–22) that the percentage added for this purpose to the factory cost during the early part of his connection with the Respondent " would approximate 25 per cent.", but that during the last two years of his connection it " was invariably 25 per cent."

As to the blueprints showing the cost of labor and material, he said (Rec., p. 372, Qs. 23–25) that he had used such blueprints in making up prices and inventories, and that during the time he was with the company they were carefully preserved, and if the records were not made up into tracing form, it was carefully tabulated and copied into books, which were on file in the engineering department in such form that the prices on transformers could be readily ascertained.

In regard to the practice of the Respondent in making inventories of stock, Foster said (Rec., p. 373, Q. 26) :

" During the time I was with the Wagner Company it was the practice to take an inventory of all the apparatus in the factory on approximately January 1st and July 1st of each year. This list when made up, was sent to the Engineering

Department to have all the items appearing thereon priced, and in order to arrive at the necessary or at the proper price for the various sizes and kinds of apparatus, it was necessary to refer to the tables of prices and which covered the apparatus in its various stages of construction."

In answer to Qs. 27-28 he said that in making up the inventories it was necessary to refer to the blueprints; and Qs. 29-37 that these inventories were "suitably bound and filed in the vault," where they were preserved to be used for reference when desired.

In answer to Qs. 66-67 (Rec., p. 379), he said that while he was with Respondent it was possible to ascertain, from the records of the company, the cost, as well as the selling price, of any transformer desired.

The testimony of Johannesen and Foster (Rec., pp. 338-384) is not very voluminous, and we invite a careful inspection of it. It certainly is in strange contrast with the earlier testimony of Layman, in which he tells us (between pages 332 and 335) that it was impossible for him to ascertain from the books of the Respondent "*or otherwise*" the cost of manufacturing the infringing transformers, or the profits made by Respondent thereon.

Since Layman had testified that the profits made on the infringing transformers were commingled with the general profits of the Respondent, and that he could not ascertain from the books of the Respondent "*or otherwise*" the cost of manufacturing the infringing transformers, and therefore could not give the profits made on the infringing transformers, and since he failed to produce the Inventories which were in Respondent's vaults, from which Johannesen testified that the cost of the infringing transformers could be ascertained, we submit that the Master was clearly warranted in accepting the testimony of Johannesen and Foster and in estimating these profits on the 25 per cent. basis.

Respondent's Admissions and Suppression of Evidence.

Respondent in reply recalled Layman,—this time a willing witness. He admitted that the blue print estimates introduced in connection with the testimony of Johannesen and Foster were unquestionably correct (Rec., p. 474), but tried to minimize their effect by stating that while the system prevailed substantially as those witnesses stated, yet the blue prints were merely cost estimates and did not truly represent the cost. How he could say they did not truly represent the cost without stating what the costs actually were, he does not attempt to explain. He either knew that the actual costs were or he did not. If he did, he should have given them, but in the absence of this, we had a right to rely on those cost estimates as the best evidence available to us, and the Master was warranted in accepting them as such.

Layman admitted in answer to Q. 212 (Rec., p. 460) that " in arriving at estimates of cost it had always been the practice of the Respondent to estimate as nearly as possible in advance of manufacture the labor and material values, and to superpose upon those values an amount to cover general operating expenses," which was exactly what the witnesses Johannesen and Foster testified to.

Layman also said (Rec., p. 464, Q. 214) that he thought it was " a general principle in manufacturing business that a company such as his should not receive less than 25% profits on all its sales, to be in sound manufacturing and financial condition ; " and also, that (near foot of p. 466) his company " did aim at making, if possible, a general 25% average on the business." In answer to Q. 227 (p. 480), he admitted that profits were made on the business, but said that if profits were made on the infringing transformers he could not distinguish them from profits made on the balance of the business.

It is amusing to note (Rec., p. 485) that Layman, who had in his first testimony before the Master admitted that from 1896 until the decision in the Carbide case, Respondent had infringed claim 4 of the patent in suit, undertakes to say (Rec., p. 485), that the reason Respondent made those in-

fringing transformers with open spaces in the core by inserting spacing blocks in the core, was merely shop convenience.

Now, bearing in mind what Layman had stated that it was not possible for him to ascertain from the books of Respondent "*or otherwise*" the cost of manufacturing the infringing transformers or the profit made by Respondent thereon, yet, after he has been confronted with the testimony of Johannesen and Foster, he admitted that Respondent did keep inventories, just as Johannesen and Foster testified. He said (Rec., p. 481, Q. 231): "It was the practice of the company to make at least one inventory a year, and I think sometimes two a year were made during the period of this schedule." Respondent's counsel then asked him (p. 482, Q. 232): "Are those inventories available at the present time, covering the period of these schedules of transformers?" and he answered: "*I think they are, or at least they ought to be in the vaults of the company*"; thus again affirming the testimony of Johannesen and Foster.

Then Respondent's counsel made the following statement (Rec., p. 482):

"MR. FOWLER: I will say to the Master that on this matter of inventories I shall drop the matter for the present, because I have not examined them and do not know anything about them."

The inventories were never again referred to by the witness or his counsel.

In view of the above it is fair to presume that those inventories would have shed light on the actual cost of the infringing transformers and that the evidence which they contain made for the Petitioner's contention and not for the Respondent's.

In Yesbera v. Hardesty Mfg. Co., 166 F. R., 122, the Court of Appeals of the Sixth Circuit said:

"It may be that more stringent measures might have been taken to enforce the order of the court, if, as the master believed, the defendant had the control of the missing books and records. But the defendant cannot complain of that. His failure or refusal to produce the most satisfactory evidence leaves his case exposed to the presumption that if produced it would tell against him, and compels the court to rely on the less definite and certain evidence which the record may supply.

This is a rule by which the courts are governed. If they fail to observe it, the rights of parties may utterly fail of protection."

The Master referred to the above in his fourteenth finding of fact (Rec., p. 286), as follows:

"That the defendants admitted in the evidence of the witness Layman, page 334 [page 482 of the present record] that it had in its vaults inventories made annually or semi-annually, referred to in the testimony of Johannesen, and omitted to produce the same in evidence."

Not only was the Master justified in this finding of fact, but the inferences drawn therefrom by the Master are justified by the decisions of this Court in analogous cases.

In Clifton v. United States, 4 Howard, 246, this Court had under consideration instructions given by the Court below, in which the Court below had stated:

"That the claimant knew from whom he had bought the goods and what was their actual cost, and yet had not produced this testimony, or accounted for its absence; that to withhold testimony which it was in the power of the party to produce, in order to rebut a charge against him, where it is not supplied by other equivalent testimony, might be as fatal as positive testimony in support or confirmation of the charge. And that if the claimant had withheld testimony of his accounts and transactions with these parties (meaning the foreign houses from whom he had purchased the goods), the jury were at liberty to presume that, if produced, they would have operated unfavorably to his case."

In passing upon the above instructions, so applicable to the case at bar, this Court said (p. 246):

"The instructions had a direct reference to, and are to be construed as intended to bear upon, the matters of defence, probable cause having been shown; and upon the nature and species of the evidence relied on by the claimant in support of it; and in this aspect of the case, at least, without now referring to any other, we think they were not only quite pertinent to the question in hand, but founded upon the well-established rules and principles of evidence."

In Kirby v. Tallmadge, 160 U. S., 379, 383, referring to a very similar circumstance, and to the power of the defendant

to have produced evidence to contradict the complainant's contention, if the records of the concealed or unproduced evidence had in fact contradicted complainant's contention, this Court said:

"'All evidence,' said Lord MANSFIELD in Blatch v. Archer (Cowper, 63, 65), 'is to be weighed according to the proof which it was in the power of one side to have produced and in the power of the other side to have contradicted.' It would certainly have been much more satisfactory if the defendants, who must have been acquainted with all the facts and circumstances attending this somewhat singular transaction, had gone upon the stand and given their version of the facts (McDonough v. O'Niel, 113 Mass., 92; Commonwealth v. Webster, 5 Cush., 295, 316). It is said by Mr. Starkie, in his work on Evidence, vol. 1, p. 54: 'The conduct of the party in omitting to produce that evidence in elucidation of the subject-matter in dispute, which is within his power, and which rests peculiarly within his own knowledge, frequently affords occasion for presumptions against him, since it raises strong suspicion that such evidence, if adduced, would operate to his prejudice.'"

But there is further evidence in the record showing the suppression or destruction of records which might have thrown light on the question of profits.

Layman testified that in addition to the estimates of cost testified to by Johannesen and Foster (Rec., p. 576, foot), Respondent (Rec., p. 461) employed in its business a "system of job numbers with which we attempted to secure actual labor and material cost with which to check the preliminary estimates made by Mr. Johannesen or other members of the engineering department." But he remarked, gratuitously, that "in actual practice these job numbers showed costs practically invariably in excess of all estimates, and were of so little value in the predetermination of costs as to have finally led to the entire abandonment of the system, and the *burning up of all the shop numbers on which reports were made up*" (Rec., p. 461). It was easy to make these statements after the records were safely destroyed.

On cross-examination, Layman said (Rec., p. 513, x-Q. 306) that the purpose of having that system of job numbers "Was to keep an actual account of the cost of labor and material going into the apparatus," and that (x-Qs. 303, 304) those records were destroyed within a year or two from "the

date of the last sale shown on the schedule, which comes down to November 14, 1901." Judge HAZEL'S decision in the Carbide case was rendered November 11, 1901, and that of the Court of Appeals on May 29, 1902.

Infringers of patents, being trustees for the owners in respect to profits made by reason of infringement, are not permitted to thus destroy evidence which would throw light upon their trusteeship, and then take advantage of their own wrong, by contending that under such circumstances the Master may not properly estimate the profits.

Respondent also produced the testimony of F. T. Schwedtman (Rec., pp. 514–531), which, while it was offered for the purpose of contradicting Johannesen and Foster, largely confirms their testimony. Schwedtman was one of the organizers and general superintendent of the Respondent company (Rec., p. 514, Q. 316). Referring to the testimony of Foster and Johannesen and the cost estimates they testified about, Schwedtman said, in answer to Q. 322 (Rec., p. 516, Q.. 322): "We knew positively in the office that they were not correct, *but we did not know a way of getting closer to it.*"

Schwedtman claimed that while on special transformers they attempted to get 25 per cent. over and above the factory cost estimates (Rec., p. 518), nevertheless they did not always succeed, and that the profits testified to by Johannesen and Foster were not made; but, like Layman, he declined to tell us what the profits were.

Schwedtman (Rec., p. 521, Q. 324) said that Johannesen was a very conscientious man, and on the same page and in the second paragraph of the same answer, he confirmed the testimony of Johannesen and Foster as to the keeping of inventories and making these inventories annually and semi-annually. These were the same inventories that Layman admitted (Rec., p. 482) were in the possession of Respondent, but which he did not produce. At page 522 of the record, when Schwedtman was being examined, Petitioner's counsel repeatedly insisted upon those inventories being produced as the best evidence, but Respondent's counsel failed to produce them, although here he tried to get second-hand evidence from the witness as to their contents.

Schwedtman (Rec., p. 522, Qs. 325–328; p. 529, x-Q. 350)

identified the blueprints introduced in evidence in connection with the examination of Johannesen and Foster as correct and as showing the system which then prevailed in the Respondent company.

On cross-examination, Schwedtman admitted (top page 528) that the practice as to percentages was in line with the testimony of Johanneson and Foster. In answer to x-Qs. 339 and 340 (Rec., p. 528) Schwedtman admitted that Foster was authorized to make prices to the sales organization of the Respondent; in answer to x-Q. 341, that Respondent was a competitor of the Petitioner in the manufacture and sale of transformers; in answer to x-Q. 343 (Rec., pp. 528–529) that he did not mean to say that the Respondent sold its transformers accounted for at a loss; in answer to x-Qs. 346–348, that 25 per cent. was an unusual profit on standard lines; but x-Q. 349 that 25 per cent. profit on a patented article is not unreasonable. It must be remembered that Petitioner's transformer was a patented article and that Respondent, during the period of the inquiry on the accounting, was manufacturing its infringing transformers in competition with Petitioner.

Schwedtman says (Rec., p. 529, x-Q. 352) that during the time outlined in the schedule, and during the time testified to by Johannesen, Respondent, had no better system for estimating the costs of making these transformers than that testified about by Johannesen; but (Rec., p. 530) that it was impossible to separate the profits on transformers from the profits made by Respondent's general business, that all the profits were commingled.

The Master's Estimation of Profits.

In view of the above circumstances and under the rule established by the decisions of this Court which we have hereinbefore cited, notably Manufacturing Co. vs. Cowing, 105 U. S., 255, and Rubber Co. vs. Goodyear, 9 Wall., 802, 803, 804, applying to the facts in this case the doctrine that Courts of Equity apply to cases of a trustee who has wrongfully used the trust property and commingled the profits made by the use of the trust property with the general profits, and under the doctrine laid down in Tilghman vs. Proctor, 125 U. S., 148,

the Master estimated the profits, and found that Petitioner was entitled to recover from Respondent the sum of $132,433.35 and recommended a judgment for that amount (Rec., p. 301). The Master's Report was filed July 29, 1907 (Rec., p. 302).

We believe it may be of some service to the Court to explain the Master's mode of calculation which resulted in the various tables, and particularly the table (Rec., p. 299) by which the Master shows that the profits to which Petitioner is entitled amount to $132,433.35.

The Master found, according to his report (Rec., p. 287), that the profits of Respondent for the manufacture of the infringing transformers, as nearly as it could be reached through estimates, comparisons and apportionment, was approximately 25 per cent. of the net amount of the sales of the infringing transformers. Therefore, as a basis of calculation the Master took the gross sales of the infringing transformers, amounting to $955,271.76 (Layman's statement, Rec., pp. 335 and 299), and deducted therefrom the commissions paid (Table No. 5, Rec., p. 299), amounting to $81,211.61, the net amount being $874,060.15.

As the Master states in his report (about the middle of page 291 of the record):

"I have adopted the defendant's estimate of the percentage of factory cost, and from these data I have been obliged to calculate the flat labor and material which the defendant professed itself utterly unable to furnish."

The factory cost, the Master determines (Record, 299), should be fixed at 40 per cent.; that is, 40 per cent. of the amount of "flat labor and material" account, and to be added thereto. In further explanation of this the Master says (Record, 292):

"Flat labor and material is an arbitrary percentage; factory cost is an arbitrary percentage added to flat labor and material, and based upon it. Profit is, in the first instance, an arbitrary percentage also added to flat labor and material."

After determining that the amount for factory cost to be added to flat labor and material was to be considered as 40 per cent. of the amount of said flat labor and material, and that the amount of profit realized by respondent on the

infringing transformers was to be considered as 25 per cent. on the net amount of the sales, there remained for the Master only to decide as to whether this 25 per cent. for profit was to be calculated upon the amount of "flat labor and material" and "factory cost" combined, or on "flat labor and material" alone. He decided for the latter (which was more favorable to Respondent), saying (Rec., p. 298):

"I am convinced that the true interpretation of the testimony is that the 25% profit is to be calculated upon the flat labor and material account alone."

Given the net amount which the defendant claims to have received for its infringing transformers after deducting the commissions paid to agents, said net sum being $874,060.15, and bearing in mind that a certain unknown quantity called "flat labor and material" is to be found, that 40 per cent. of the amount of this unknown "flat labor and material" was added thereto as factory cost, and that 25 per cent. of said unknown "flat labor and material" was added thereto for the purpose of obtaining the profit, we can consider the "flat labor and material" as a unit representing 100 per cent. to which we must add 40 per cent. and 25 per cent. thus making a total of 165 per cent., or 1.65.

Dividing the $874,060.15 by this 1.65 we obtain the result $529,733.43 as the amount of flat labor and material. We learn the factory cost, which is to represent 40 per cent. of this "flat labor and material", by multiplying $529,733.43 by 40 and dividing by 100. We obtain the 25 per cent. of this $529,733.43 by multiplying said sum by 25 and dividing by 100. These three sums added together will make the total net amount received by the company, namely, $874,060.15 as shown in Table No. 5, adopted by the Master (Rec., p. 299), thus:

Flat Labor and Material	529,733.43
Factory Cost 40 per cent	211,893.37
Profit 25 per cent	132,433.35
Total	874,060.15

Respondent claimed below a credit of $90,000 for the cost of re-building certain transformers included in the accounting.

This claim was based upon Layman's testimony at page 461, last paragraph, and page 469, Q. 219 of the Record. He does not give any particulars in regard to this alleged loss, nor produce any books or records to prove it, or in what it consisted. On the contrary he says (Rec., p. 462, top) "This figure of $90,000 is estimated as near as we are able to get at it." The claim is a bald one, the amount wholly arbitrary, and the evidence insufficient to support it. But even if the evidence was sufficient, the claim is inadmissible.

The matter was considered by the Master (Rec., p. 294), who held, in accordance with the doctrine laid down by this Court in Crosby Valve Co. v. Safety Valve Co., 141 U. S., 454, such an item could not be deducted from the profits derived from the manufacture and sale of the infringing transformers.

Respondent's Evidence of Lack of Utility of the Invention in Suit.

In answering Petitioner's proofs before the Master, Respondent took the testimony of Nipher, Gray, Wells and Langsdorf found in the record between pages 402 and 448, in a thinly disguised attempt to show that there was no utility in the invention of claim 4 in suit. That testimony was irrelevant and immaterial on the hearing before the Master, and was so objected to by us, because the Respondent was estopped from denying the utility of the invention by the decree in the Carbide case. The Master received the testimony subject to the objection, but on considering it, he said in his report (Rec., p. 289): "I am satisfied that the testimony of Professors Nipher, Gray and Langsdorf, and Mr. George E. Wells, introduced on behalf of the defendant, is wholly irrelevant to the matter of this accounting." Furthermore, as this Court has held in Lehnbeuter vs. Holthaus, 105 U. S., 94, the fact that the defendant infringed a patent is sufficient to establish utility of the invention as against the defendant.

Part of this testimony as to lack of utility was based upon some comparative tests of operation between Respondent's infringing transformers and Respondent's Type M Transformer, which, as the Circuit Court had held, was not an in-

fringement of claim 4 and therefore open to the use of respondent, the latter claimed was a competent basis of comparison. Incidentally, we will remark that this view was fallacious, because it was a subsequent device, not having been brought out and used by respondent until 1901; and therefore not a proper basis of comparison. If the rule were otherwise pat nts might be destroyed and the owner deprived of all profits arising therefrom, by subsequent inventions based thereon as said by Justice HARLAN in

Turrill v. Ill. Cent. R. Co., 20 F. R., 914.
See, also, Crosby Valve Co. v. Safety Valve Co., 141 U. S., 441, 444.

But a stronger reason, as we have shown in a preceding section of this brief, at pp. 18-19, is that the Type M transformer was merely an equivalent and later form of the Westinghouse invention of claim 4.

In Machine Co. v. Murphy, 97 U. S., 120, 125, this Court said:

"Authorities concur that the substantial equivalent of a thing, in the sense of the patent law, *is the same as the thing itself;* so that if two devices do the same work in substantially the same way, and accomplish the same result, they are the same, even though they differ in name, form or shape."

Therefore, as the Type M transformer, with its additional longitudinal open spaces in the core, is the same as the Westinghouse converter in suit, with its longitudinal and transverse open spaces in the core, it is not surprising that it showed the same results upon comparative operation.

It is no answer to this to say that claim 4 applies only to the transverse spaces in the core, for, even if this were true, which we deny for reasons hereinbefore stated, the improvement is of such a primary character and the invention of such a high grade, that it falls into the class of cases where the fact that the specification described and the claim specified only one form, did not prevent the claim from being construed to cover other forms or constructions as equivalents, such as

Winans v. Denmead, 15 Howard, 330.
Hoyt v. Horne, 145 U. S., 302, 308.
Reece Co. v. Globe Co., 61 F. R., 958 (C. C. A., 1st Cir.).

The Opinion of the Court of Appeals as to Confusion of Profits.

On the matter of the confusion of profits, the majority opinion said (Rec., p. 589):

"The Master found that the appellee kept no separate account of its profits realized from its infringing device, but on the contrary, that the profits made by appellee on the infringing transformers were merged with the profits of its entire business, so that it was impossible to separate them and that the appellee did not know and could not furnish the cost of the manufacture of the infringing transformers or even an estimate thereof. We do not think the mere failure to keep separate the profits derived from the infringing device under the circumstonces disclosed by the record, warrants the application of the equity rule, that where one wrongfully mingles his goods with those of another so that they are indistinguishable from the mass, the party injured is entitled to take the whole. This rule has been applied in cases of the invasion of a copyright where the wrongdoer has mingled in the book, matter to which a copyright does not properly extend with matter covered by the copyright, 'the two necessarily going together, when the volume is sold as a unit, and it being impossible to separate the profits on the one from the profits on the other and the lawful matter being useless without the unlawful.' Callaghan v. Myers, 128 U. S., 617."

We submit that it was not merely the failure of Respondent to keep separate the profits derived from the infringing transformers that impelled the Master to estimate Respondent's profits on the infringing transformers; it was the sum of the circumstances mentioned above that warranted the Master's findings of fact in relation thereto, which are set forth in the Master's report (Rec., pp. 286–287). Surely, there was evidence before the Master warranting him in holding that under the circumstances the Respondent could not conceal its profits on the infringment in the vague and general statement furnished by Mr. Layman (Rec., p. 355).

There was evidence before the Master in this case proving, among other things, the following:

(1) That Respondent had made profits on the infringing transformers accounted for;

(2) That certain records which might have shown these

profits with exactness, or at least have shed important light on the question of Respondent's profits, were first declared by Layman not to exist, and were afterwards withheld by Respondent, and that other important records bearing on the question of the cost of manufacturing these infringing transformers had been destroyed by Respondent soon after the decision on the Carbide case ;

(3) That Layman made a studied effort to keep back the whole truth and all the facts bearing on the question of Respondent's profits ; and

(4) That the profits on the infringing business were confused with the profits of Respondent's general business, and the only statement as to profits furnished by Respondent was a general one (Rec., p. 335) in which all the profits of the business were commingled.

In view of the above and under all the circumstances of the case, we submit that the Master was clearly warranted in his findings, and that on this record it cannot be said that in making those findings "*there clearly appears to have been error or mistake on his part.*"

We believe that the majority of the Court entirely missed the equitable principles applicable to the evidence developed in the record in this case, and that there being evidence which warranted the Master in making the findings of fact, the following extract of the dissenting opinion of Judge SANBORN correctly states the equitable principles applicable here :

" It appears to me therefore that the complainant was the owner of all the profits which the defendant derived from the manufacture and sale of the infringing converter and that the defendant was in equity a trustee of those profits for the complainant. The Supreme Court declares that it is the established rule of the nation that in a case of this nature a court of equity will administer full relief by awarding 'a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property to his own advantage.' *Tilghman v. Proctor*, 125 U. S., 136, 148. What is that rule? Chancellor KENT stated it in *Hart v. Ten Eyck*, 2 Johnson's Chancery Reports (N. Y.), 62, 108, in these words: 'The rule of law and equity is strict and severe on such occasions. If a party having charge of the property of others, so confuse it with his own, that the line of distinction cannot be

traced, all the inconvenience of the confusion is thrown upon the party who produces it, and it is for him to distinguish his own property or lose it.' The Supreme Court approved this statement of the rule in 'The Idaho,' 93 U. S. 575-576.

"The primary duty of a trustee is to keep the property of his *cestui que trust* separate from his own, to keep an account of it and to deliver it to the *cestui que trust*. This infringer kept no account of these profits but mingled them with the profits of its general business so that it was impossible for it or for any one to accurately separate them. But the record contains persuasive evidence of the entire amount which the defendant received from the sale of the infringing converters and that it customarily added to the cost of manufacture and sale a profit of 25 per cent. to make up its selling price. There is also persuasive evidence of the total amount received by the defendant from all its business during its infringing years and of the total profits delivered from its business during these years. These are ample facts upon which to base a just and equitable finding of the amount of profits which the defendant derived from the sale of these infringing machines. The master has made a finding after a careful consideration of all the evidence upon the subject and that finding is presumptively right. The indisputable facts that for years the defendant continued to infringe until it had made and sold infringing machines from which it realized more than $800,000,00. are sufficient to satisfy the mind that its appropriation of the complainant's combination was profitable and when to this is added the evidence that 25 per cent. of the cost was ordinarily added by it to make its selling price it seems to me to be inequitable to permit the defendant to keep this property of the complainant because it mingled it with its own and thus allow it to take advantage of its own wrong. Of such a defense Lord Chancellor BROUGHAM said in *Docker v. Somes*, 2 Myl. & Keene, 674:

> "When did a court of justice, whether administered according to the rules of equity or law, ever listen to a wrongdoer's argument to stay the arm of justice grounded on the steps he himself had successfully taken to prevent his iniquity from being traced? Rather, let me ask, when did any wrongdoer ever yet possess the hardihood to plead in aid of his escape from justice the extreme difficulties he had contrived to throw in the way of pursuit and detection, saying, 'You had better not make the attempt, for you will find I have made the search very troublesome?' The answer is, 'The Court will try.'"

"The defendant cites again the cases of *Garretson v. Clark*, 111 U. S., 120; *Seymour v. McCormick*, 57 U. S., 479, and *Keystone Mfg. Co. v. Adams*, 151 U. S., 139, in defense of its

course, but they are inapplicable, because in such cases of slight improvements on operative machines it is often impossible for the infringer to know the portion of the profit attributable to the improvement and hence its duty to keep that part separate is not so imperative. But where, as in the case in hand, the complainant is entitled to the entire profits from the infringing devices of the defendant the duty is imperative and the failure to discharge it or the failure to distinguish subsequently such profits from its own, subjects, and ought to subject, the infringer and not its victim to any unavoidable loss that results from the inaccuracy either of the defendant's disclosure of its profits or of the complainant's proof, when there is any substantial evidence upon which to base an estimate of the profits derived from the infringing devices."

The majority of the Court seemed to think that while the rule as to the commingling of profits may be applicable to a copyright case it is not applicable to a suit for infringement of a patent, and that, therefore, the doctrine applied by this Court in Callaghan v. Myers, 128 U. S., 617, is not applicable to the facts in the case at bar, Callaghan v. Myers being a copyright case.

We submit that there is a very close analogy between a copyright case and a patent case in the matter of the recovery of defendant's profits ; especially so, where the defendant in a patent case has used the entire invention claimed by a claim of the patent in suit, plus, perhaps, some detail of construction and made a profit on the entire thing sold, and where the defendant makes no effort to separate out the profits on the additional feature or detail from the profits on the patented article. Contrary to the views expressed by the majority of the Court of Appeals, this Court, recognizing the analogy in this respect between a patent and a copyright case, in the patent case of Hurlbut v. Schillinger, 130 U. S., 472, cites with approval its earlier decision in Callaghan v. Myers, when it says at page 472 of 130 U. S. :

"In Elizabeth v. Nicholson Pavement Co., 97 U. S., 126, 139, it is said that 'when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy.' This language was quoted with approval in Root v. Railway Co., 105 U. S., 189, 203. As in the case of the Nicholson patent, so in the case of the Schillinger patent, the pavement was a complete combination in itself, differing

from every other pavement, and the profit made by the defendant was a single profit derived from the construction of the pavement as an entirety (Callaghan v. Myers, 128 U. S., 617, 665–666)."

Therefore, believing the majority of the Court of Appeals to be in error, we not only cite and rely upon, *inter alia*, the case of Callaghan v. Myers, but also the following copyright case on the question of the recovery of profits:

In Hartford Printing Co. v. Hartford Directory & Pub. Co., 146 Fed., 332, the Court held: Where the infringing parts of the directory are intermingled with other parts about which there is no evidence, and defendant makes no effort to separate them, it must account for all profits made on the entire sales. This last-named decision simply follows the rule laid down by this Court in Callaghan v. Myers.

In contrast with the views expressed by the majority of the Court of Appeals, and in harmony with our contention and with the views of Judg SANBORN, quoted above, is the decision of the Court of Appeals for the Sixth Circuit in Dowagiac Mfg. Co. v. Superior Drill Co., 162 Fed., 479, 481 (opinion by Judge SEVERENS, concurred in by Judges LURTON and RICHARDS), where the rule laid down by this Court in Rubber Co. v. Goodyear, 9 Wall., 802, 803, 804, in Callaghan v. Myers, 128 U. S., 617, is applied, the Court holding that where the infringement was deliberate and intentional, the defendant could not avoid liability for profits by so confusing the profits made on the infringing business with the profits made on its general business, that the profits made on the infringing articles could not be readily separated from the profits on its entire business.

In the case at bar, we believe that under the evidence before him, the Master was clearly warranted in estimating the Respondent's profits on the data furnished him by Johannesen and Foster, and especially so in view of the attitude taken by the Respondent's General Manager and Treasurer Layman; and, therefore, we are not able to agree with the following sentence in the opinion of the majority of the Court of Appeals:

"There is no evidence tending to show that the appellant's failure to show how much of the appellee's profit resulted from the infringed combination and how much from the presence of

the other elements of the infringing transformer, *was due to any refractory or deceitful conduct on the part of the appellee, such as destruction or hiding of the books, or refusal to produce them for the use of the appellant.*"

But the trouble was that the deceitful and refractory conduct on the part of the witness Layman and the whole attitude of the Respondent on this accounting, as the record shows, proved clearly that the Respondent sought to prevent *some available facts* as to the profits made by the Respondent on the infringing transformers, from being adduced before the Master. As to this the Master found (Rec., p. 286):

"14. That the defendants admitted in the evidence of the witness, Layman, p. 334 [Rec., p. 482], that it had in its vaults inventories made annually or semi-annually referred to in the testimony of Johannesen, and omitted to produce the same in evidence."

The Majority of the Court of Appeals did not Attach Sufficient Weight to the Findings of the Master, and Fails to Show that his Findings of Fact and Conclusions of Law Were Erroneous.

As to the weight which should be given to the Master's report in such a case as this, this Court says in Tilghman v. Proctor, 125 U. S., 149–150:

"We are then brought to a consideration of the exceptions taken to the Master's report in matters of fact, affecting the accuracy of his conclusions in respect to the amount of those profits, gains and savings. In dealing with these exceptions, the conclusions of the Master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part. Medsker v. Bonebrake, 108 U. S., 66; Donnell v. Columbian Ins. Co., 2 Sumner, 366, 371; Mason v. Crosby, 3 Woodb. & Min., 258, 269; Paddock v. Commercial Ins. Co., 104 Mass., 521, 531; Richards v. Todd, 127 Mass., 167, 172."

In Crawford v. Neal, 144 U. S., 585, this Court holds as follows:

"The findings and conclusions of a Master upon conflicting testimony are to be taken as presumptively correct, and unless some obvious error in the application of the law has intervened, or some serious or important mistake has been made in the consideration of the evidence the decree should stand."

To the same effect is Furrer v. Ferris, 145 U. S., 132, citing Kimberly v. Arms, 129 U. S., 512.

In Warren v. Keep, 155 U. S., 265, this Court affirmed the decision of the Circuit Court for the Southern District of New York, in the case of Keep v. Fuller, 42 Fed., 897, in which case Judge COXE, Circuit Judge, said:

"It is wise to remember at the outset that the Court is not now to decide *de novo* the various questions presented on the accounting. The present investigation is confined simply to the question—Did the Master make any mistake which requires the setting aside of his report? He stands as the representative of the Court, and is better able by far, than one who only reads the testimony from a printed book, to tell what witnesses are entitled to credit, and where the truth lies in the controversy before him. His findings are *prima facie* correct, and the burden of showing error is upon the party who excepts. If the proof is sufficient to sustain the Master's findings it is enough. The investigation terminates at this point, even though the Court, sitting in the Master's place, might, upon similar evidence, reach a different result. 'The conclusions of the Master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part.' Tilghman v. Proctor, 125 U. S., 136, 149, 8 Sup. Ct. Rep., 894; Callaghan v. Myers, 128 U. S., 617, 666, 9 Sup. Ct. Rep., 177; Kimberly v. Arms, 129 U. S., 512, 525, 9 Sup. Ct. Rep., 355; Central T. Co. v. Texas R. Co., 32 Fed. Rep., 448; Welling v. La Bau, 34 Fed. Rep., 41, and cases cited. Tested by the rule of these cases, it cannot be said that the Master's findings of fact are erroneous, except, perhaps, in a few particulars which will be referred to hereafter."

A Master appointed to take an accounting is a judicial officer, representing the Court in this work, and his findings are and should be entitled to the greatest weight; they are not to be lightly set aside and will not be set aside except in

the case of a very clear mistake. In regard to any doubtful matters the presumption will be in favor of the Master's report. The courts recognize that the findings of a Master are entitled to even greater weight than the findings of a jury. In the case at bar, the Special Master appointed by the Court is not only a lawyer, but a man of very extensive experience as a Master in Chancery in considering and weighing evidence; and he has had an advantage which the Court cannot have, for he has seen the witnesses and had an opportunity of observing their appearance, attitude and manner on the stand, of hearing their testimony and of interrogating each witness himself.

In the case at bar the record shows that the Master had abundant warrant for his findings of fact, while the decisions of this Court support him in his conclusions of law and show that the majority opinion of the Court of Appeals for the Eighth Circuit in the case at bar is in conflict with the decisions of this Court in analogous cases.

GARRETSON v. CLARK, 111 U. S., 120.*

This case, utterly inapplicable to the facts in the case at bar, is cited by the majority opinion of the Court below on the following proposition:

"The patentee must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's between the patented feature and the unpatented features, and such evidence must be reliable and tangible and not conjectural or speculative."

The trouble is that that proposition does not apply to the facts in the case at bar. In the case at bar, unlike the case of

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*In the Columbia Law Review of November, 1910 (Vol. X., p. 639), is an article by Wm. Macomber of the New York Bar, on "Damages and Profits in Patent Causes," in which he discusses the rule laid down in Garretson v. Clark, and refers to the case at bar in illustration of his argument. The article, of course, is without authority, but it is an interesting contribution to the literature on the subject. We confirm Mr. Macomber's statement that he "is not, and never has been, in any way connected with the Westinghouse interests."

Garretson vs. Clark, where the patent was for a mere feature in the mop head, the invention is for a complete combination in itself—for a wholly new thing *as an entirety*,—which combination, *as an entirety*, the defendant has used. This tribunal has repeatedly construed its decision in the case of Garretson v. Clark and held that the rule there laid down does not apply to a case like the one at bar, *where the invention in question is, as an entirety, "a complete combination in itself."*

In Hurlbut v. Schillinger, at page 472 of 130 U. S., this court says:

"In Elizabeth v. Nicholson Pavement Co., 97 U. S., 126, 139, it is said that 'when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy.' This language was quoted with approval in Root v. Railway Co., 105 U. S., 189, 203. As in the case of the Nicholson patent, so in the case of the Schillinger patent, the pavement was a complete combination in itself, differing from every other pavement, and the profit made by the defendant was a single profit derived from the construction of the pavement as an entirety. Callaghan v. Myers, 128 U. S., 617, 665-666.

"Within the decision in Garretson v. Clark, 111 U. S., 120, the proof in this case is satisfactory, that the entire value of the defendant's pavement, as a marketable article, was properly and legally attributable to the invention of Schillinger."

So, in Crosby Valve Co. v. Safety Valve Co., *where the claim was on the improved valve as an entirety*, and where the defendant had used that valve plus some features which he claimed as improvements, this Court says, at page 453 of 141, U. S.:

"In regard to the holding by the master and the court that all the profits of the defendant from the valves it made and sold were to be attributed to the employment by it of the improvement covered by the patent of 1866, we hold that, in view of what was determined in the former opinion of this court, and on the whole case, the safety-valves known to the art and open to be used by the defendant would not do the same work as the Richardson invention covered by the patent of 1866, or have any commercial value; and that, within the case of Garretson v. Clark, 111 U. S., 120, it appears, by reliable and satisfactory evidence, that the profits made by the defendant are to be calculated in reference to the entire valve

made and sold by it, for the reason that the entire value of that valve, as a marketable article is properly and legally attributable to the patented feature of the patent of 1866."

Thus this Court by its own decisions has distinguished cases like the one at bar from cases such as Garretson v. Clark.

In the case at bar, however, as had been antecedently found by the Circuit Court and Court of Appeals for the Second Circuit in the Carbide case, the invention of claim 4 was for a new converter, which accomplished marvelously improved results o er anything which had never been accomplished in the prior art. Relatively speaking, the prior device was an inoperative and unsaleable one.

Furthermore, the Master in this case expressly found (Rec., 285), in harmony with the things found and decreed in the Carbide case, that the invention of claim 4 constituted an entirely new transformer, complete in itself ; that this entirely new transformer, complete in itself, was infringed, in its entirety, by the Respondent, in all of its infringing transformers ; and that the entire commercial value of the infringing transformers so manufactured and sold by the Respondent, at and during the time covered by the accounting, was due to this invention.

In Seymour v. McCormick, 16 Howard, 480, a rule similar to that laid down in Garretson v. Clark, 111 U. S., 120, was stated, because in Seymour v. McCormick the patent was only on the driver's seat of the mowing machine, while the Master had allowed profits on the entire mowing machine, including the driver's seat.

In the case at bar, however, as in Hurlburt v. Schillinger, 130 U. S., 471, 472, Elizabeth v. Pavement Co.. 97 U. S., 126, and Crosby Valve Co. v. Safety Valve Co., 141 U. S., 453, the invention in question is for an improved structure *as an entirety* or unit, and the defendant had used *that entirety* or unit, and therefore the complainant was entitled to recover all the profits which the defendant had made by using this invention as an entirety, or what might be reasonably estimated as the profits made by the defendant.

The Westinghouse invention was a remarkable achievement. The progress of the electric art was seriously impeded by the failure of the converter to keep up with the develop-

ment in size and capacity of the generator on one side and that of the motor on the other. The capacity of generators and motors had reached into hundreds of kilowatts, but the maximum capacity of commercial converters was 10 kilowatts. This limitation was the result of a natural law which seemed to interpose an insurmountable barrier to further advance. It is well stated in the opinion of the Court of Appeals in the Union Carbide case (117 F. R., 498), as follows:

"But when the art began to call for converters exceeding 10 kilowatts in capacity, it was found, as stated by the expert for complainant, 'that the capacity of the transformer increased as the cube of the linear dimensions, and the heat, if the amount of loss was held stationary, would increase in like proportion, while the radiating surface would increase only as the square of the linear dimensions.'"

The result of the invention was to increase the capacity of commercial converters from 10 kilowatts up to 500 kilowatts. It was therefore an invention of high grade, an absolutely new combination, performing a new function, making a distinct advance in the art, and was useful only in its entirety. It belonged to the same class as the inventions in Loom Co. v. Higgins, Elizabeth v. Pavement Co., Hurlburt v. Schillinger and Crosby Valve Co. v. Safety Valve Co., and not to that of the invention in Garretson v. Clark, and is entitled to the broad rules governing the construction of claims and determination of damages in cases relating to inventions of its class.

That the rule laid down by this Court in Garretson v. Clark, 111 U. S., 120, does not apply in a case like the one at bar, or to cases like Elizabeth v. Pavement Co., 97 U. S., 126, Hurlburt v. Schillinger, 130 U. S., 471, 472, Crosby Valve Co. v. Valve Co., 141 U. S., 453, *where the invention claimed is for a combination as a unit or as an entirety*, in which the parts co-operate, thus producing a new or improved result, resulting in an ideal, patentable combination within the meaning of this Court's decisions in Cantrell v. Wallick, 117 U. S., 694-695, and Leeds & Catlin v. Victor Talking Machine Co., 213 U. S., 319, is also the rule recognized and applied by U. S. Courts of Appeals in other circuits, appears from the following cases:

In Yesbera v. Hardesty Mfg Co., 166 Fed., 124, which in its facts is similar to the case at bar, the Court of Appeals for

the Sixth Circuit, after referring to the case of Garretson v. Clark, 111 U. S., 120, says:

"*The unanimity with which infringers seek the shelter of that case is something remarkable,*"

and then, following the rule laid down by this Court in Hurlburt v. Schillinger, 130 U. S., 471, and the other cases above cited, decides:

"The rule that, where a patent is for an improvement, to authorize the recovery of profits from an infringer, the owner must separate or apportion the profits made by defendant between the patented feature and the unpatented feature, *does not apply to a patent for a combination as a unit in which the parts co-operate.*" (Italics ours.)

So, also, in the Third Circuit, in Brookfield v. Novelty Glass Co., the Circuit Court holds (170 Fed., 830):

"Where the claim of a patent infringed is for a combination of old elements, *the invention consisting in the combination*, the infringer is liable for all the profits made by the use of the combination."

Affirmed in 170 Fed., 946.

So, in the case of Brennan Co. v. Dowagiac Mfg. Co., 162 Fed., 472, the Court of Appeals for the Sixth Circuit holds that where the invention is for a combination of elements, to accomplish an improved result, in which each element, whether new or old, is an essential part of the invention, the infringer who has appropriated the combination as a whole (the exact facts in the case at bar) is liable for the profits made on the entire machine.

To the same effect is the decision of the Circuit Court of Appeals for the Seventh Circuit in Orr & Locket Co. v. Murray, 163 Fed., 54.

To the same effect is the decision of the Court of Appeals for the Sixth Circuit in Dowagiac Mfg. Co. v. Superior Drill Co., 162 Fed., 479.

To the same effect is the decision of the Court of Appeals in the Second Circuit in Wales v. Waterbury Co., 101 Fed., 129.

Also, M'Sherry Mfg. Co. v. Dowagiac Co., 160 Fed., 949,

950, Court of Appeals for the Sixth Circuit, opinion by COCHRAN, J., concurred in by Judges LURTON and RICHARDS.

Another recent case which distinguishes Garretson v. Clark is Maimen v. Union Specialty Machine Co., 187 Fed., 123, 128, in the Court of Appeals for the Third Circuit, opinion by Judge GRAY.

So that the application, by the majority opinion, of the doctrine of Garretson v. Clark to facts such as exist in the case at bar, is not only in conflict with the rule laid down by this Court in earlier and later decisions, where the facts were similar, but is in conflict with the rule laid down by various United States Courts of Appeals in other circuits. On the other hand, Judge SANBORN's dissenting opinion states the rule applicable to the facts in the case and is in harmony with the decisions of this Court in similar cases, as well as those in other Circuits above referred to.

Petitioner not Estopped from Recovering the Full Amount Found by the Master Because of a Tentative Statement of Claim.

In the first place, under the terms of the interlocutory decree (Rec., p. 270) this cause was "*referred to Henry H. Denison, Esq., as Special Master, to take and state an account of said gains, profits,*" etc., by reason of defendant's infringement of the patent in suit. Therefore, it was for the Master *to take and state the account* on all the evidence before him on the accounting and not for Petitioner's counsel to do so. While Petitioner's counsel might make suggestions to the Master in that regard, it was for the Master to follow those suggestions or not as he saw fit. At most, those statements of Petitioner's counsel were merely tentative suggestions, made *ex gratia* and not required by the law regulating accountings under the equity rules governing the practice in the Federal Courts (Goss Printing Press Co. v. Scott, 148 Fed., 393-394).

In the next place, the statement of Petitioner's counsel found between pages 386 and 389 of the record was made at the close of Petitioner's proofs before the Master, on March 24, 1905, before Respondent had taken its proofs before the

Master, including the testimony of Layman, beginning at page 457 of the record, which contained valuable admissions favorable to Petitioner, and warranted the Master in finding a greater sum in the way of profits than any then suggested by Petitioner's counsel. Then, too, the said statement involved errors in calculation, as it turned out. But it clearly shows (Rec., pp. 386, 387, 388 and 389), that it was only tentatively made, as a mere suggestion to the Master *at that stage* and before Respondent took any proofs, as to what Petitioner *then* claimed, "*if required to make any claim at this stage*" (Rec., p. 389), it might have then been entitled to. The Master was certainly not concluded by tentative statements of Petitioner's counsel, made at that stage of the proceedings before him.

In the next place, it appears that afterwards, on April 7, 1905 (Rec., p. 385), the following proceedings were had :

"Defendant's counsel understands from the written statement submitted by Complainant's counsel at the last session in connection with the closing of Complainant's proofs, that Complainant waives all claim as to damages in this case, but claims that Complainant is entitled to certain profits which the Defendant has made.

"Defendant's counsel requests and moves the Master to find that the Complainant has not shown any profits due to the patented invention, and in view thereof Defendant's counsel requests and moves the Examiner to find that the Complainant is entitled only to nominal or no profits, and, therefore, Defendant's counsel requests and moves the Examiner to find that the Complainant should pay all costs of this reference.

"Defendant's counsel makes the above motion with the understanding that he does not waive his right, should the Master rule against the motion, to present testimony for the Defendant in this case."

It thus appears that Respondent did not accept or act upon the tentative suggestion made by Petitioner's counsel March 24, 1905 (Rec., pp. 386–389), but took the position that Petitioner was entitled to recover "*only nominal or no profits*" (Record, 385), and that Respondent then demurred to Petitioner's proofs before the Master. That thereafter the said demurrer of Respondent was overruled by the Master (Rec., pp. 392–402); whereupon, Respondent proceeded to take its proofs.

Under these circumstances, it is of no consequence what

Petitioner's counsel may have suggested to the Master at the close of the Petitioner's proofs in chief as to the award. Respondent did not act on it, nor pay or offer to pay either amount there suggested. On the contrary, as the Master points out in his report, not only did Respondent take proofs subsequently but it insisted, after all the proofs were in before the Master "*that only nominal profits should be allowed*" (Rec., p. 294).

Clearly, then, on this record, nothing in the tentative statement or suggestion of Petitioner's counsel, made at that stage of the accounting, on which statement Respondent did not act, prevented the Master from finding, after more proofs were taken, that Petitioner was entitled to recover a greater sum than either sum suggested by Petitioner's counsel in that statement. And, under the circumstances, Petitioner is not estopped from contending, as it contended in the Courts below and now contends in this Court, for the full amount to which the Master found it was entitled ($132,433.35), when he filed his report on July 29, 1907 (Rec., p. 301):

"The rule is fundamental that unless the representation of the party to be estopped has also been really acted upon—the other party acting differently, that is to say, from the way he would otherwise have acted, so that to deny the representation would prejudice him—no estoppel arises."

Bigelow on Estoppel, Fifth Edition, 638, and leading cases there cited.

Petitioner Entitled to Interest from the Date of Master's Report.

The Master's report was filed on July 29, 1907 (Rec., p. 302). It found for Petitioner in the sum of $132,433.35.

It is settled by the decisions that interest is allowed "*from the date of the filing of the Master's report.*"

Crosby Valve Co. v. Safety Valve Co., 141 U. S., 441, 457.

Illinois Central R. R. Co. v. Turrill, 110 U. S., 301, 303.

Tilghman v. Proctor, 125 U. S., 136, 160.

As this cause originated in the Circuit Court for the Eastern Division of the Eastern Judicial District of Missouri, we apprehend that the rate of interest to be allowed is the legal rate of interest under the Statutes of the State of Missouri (Revised Statutes Missouri, 1909, vol. 2, Sec. 7179), under which, when the rate of interest is not named or agreed upon, 6 per cent. is the legal rate.

Therefore, we respectfully submit that Petitioner is entitled not only to a decree for the sum of $132,433.35, as found by the Master, but to interest thereon at the rate of 6 per cent. per annum, from July 29, 1907, the date of the filing of the Master's report.

Dissenting Opinion of Judge Sanborn as to the Recovery of Respondent's Entire Profits.

Believing that the dissenting opinion of Judge SANBORN states the law applicable to the recovery of Respondent's entire profits upon the facts in the case at bar much more clearly and forcibly than we could do ourselves, and being desirous of bringing it to the attention of the Court without inconvenience to it, we have taken the liberty of including in this brief so much of the same as relates thereto, in lieu of any attempted resumé on our part. It is as follows (Rec., p. 595):

"Turning to the question of damages for the infringement by the manufacture and sale of defendant's first converter we are met by the claims that the complainant was entitled to no recovery because the defendant improved the patentee's combination by adding open spaces between the plates and the coils and no evidence was produced which separated the profits attributable to that improvement from those derived from the patented combination and because the defendant did not stand in the relation of a trustee of the profits for the patentee and owed it no duty to keep them separate or to account for them. There is some testimony in the record that the coils became more overheated than the plates and that the open spaces between the coils and the plates tend to cool the former more efficiently than the spaces between the plates. But the spaces between the plates permit the oil to circulate between the plates against and around the coils and the evidence of the superiority of the spaces between the coils and

the plates fails to persuade my mind that the latter constituted any real improvement upon the mode described by the patentee. On the other hand it leads me to believe that these new spaces and this theory concerning them constituted a mere subterfuge of the defendant conceived to avoid a just liability for its infringement.

"Moreover, the measure of the complainant's damages was not the difference between the profits the defendant would have derived from the complainant's combination and those it did derive from its form of it. It was the difference between the profits which the defendant derived from the use of the complainant's combination and those it might have derived from the use of any other combination then known and open to the public which would have produced an equally beneficial result, *Tilghman v. Proctor*, 125 U. S., 136, 146, and as there was no such combination or converter the alleged improvement was immaterial.

"The indisputable facts that converters that have a capacity between 10 kilowatts and 500 kilowatts were first made serviceable and merchantable by the complainant's combination and that all the converters made and sold by the defendant were of this capacity and embodied the complainant's combination lie conceded at the foundation of this case. Without the complainant's combination whereby the oil was circulated in a sealed case through the intervening spaces of the coils and plates and around the converter the defendant never could have used or sold one of its infringing transformers. In the light of these facts the master found that the entire commercial value of the infringing converters manufactured and sold by the defendant during the time concerned in the accounting was due to the complainant's combination. 'The conclusions of the master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part.' *Tilghman v. Proctor*, 125 U. S., 136, 150; *Medsker v. Bonebrake*, 108 U. S., 66. And the evidence not only fails to disclose to my mind any error or mistake in the findings of the master, but compels my assent to his conclusion.

"Is the complainant barred from the recovery of any of the profits the defendant derived from its infringement because it failed to separate those derived from its combination from those which the defendant otherwise derived from the infringement?

"It is settled rule that 'Upon a bill in equity by the owner against infringers of a patent, the plaintiff is entitled to recover the amount of gains and profits that the defendants have made by the use of his invention. * * * The reasons that have led to the adoption of this rule are, that it

comes nearer than any other to doing complete justice between the parties; that in equity profits made by the infringer belong to the patentee and not to the infringer, and that it is inconsistent with the ordinary principles and practice of courts of chancery, either, on the one hand, to permit the wrongdoer to profit by his own wrong, or, on the other hand, to make no allowance for the cost and expense of conducting his business, or to undertake to punish him by obliging him to pay more than a fair compensation to the person wronged. The infringer is liable for actual, not for possible, gains. The profits, therefore, which he must account for are not those which he might reasonably have made, but those which he did make, by the use of the plaintiff's invention; or, in other words, the fruits of the advantage which he derived from the use of that invention over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally beneficial result. * * * A court of equity which has acquired upon some equitable ground, jurisdiction of a suit for the infringement of a patent, will not send the plaintiff to a court of law to recover damages, but will itself administer full relief by awarding, as a substitute for legal damages, a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property to his own advantage (*Root v. Railway Company*, 105 U. S., 189, 214, 215).' *Tilghman v. Proctor*, 125 U. S., 136, 144, 145, 146, 148. Let us apply these rules to this case. The complainant is entitled to the fruits of the advantage which the defendant derived over what it would have had in using any other known converter then open to the public and adequate to enable it to obtain an equally beneficial result. There was no other known converter open to the public which could be used to produce the result obtained by complainant's combination. The complainant was consequently entitled to all the profits and all the advantages derived from the defendant's use of the infringing machine. *Crosby Steam Gauge Valve Company v Consolidated Safety Valve Company*, 141 U. S., 441, 448, 449; *Manufacturing Company v. Cowing*, 105 U. S., 253.

"The decisions present two classes of cases each governed by its own measure of profits recoverable for an infringement. Where the patented device is a slight improvement upon an existing and operative machine which accomplished the same result without as with the patented improvement, as in *Garretson v. Clark*, 111 U. S., 120; where the patented improvement was a slight change in the jaw of a well known and operative mop-head, *Keystone Mfg. Co. v. Adams*, 151 U. S.. 139; where the improvement patented was a revolving winged shaft attached to an old operative and successful corn-sheller to facilitate the movement of the corn into the

sheller, and in *Seymour v. McCormick*, 16 How., 480, where the improvement was a driver's seat upon an operative and successful harvesting machine, the profits from the sale or use of the entire machine, the entire mop-head, the entire corn-sheller, or the entire harvesting machine, may not be recovered by the patentee, but his recovery is limited to the profits derived from the patented improvement to the operative machine only. And when a complainant has a patent upon improvements to a machine parts of which are patented to others under prior grants, as in *Blake v. Robertson*, 94 U. S., 728, the recovery is likewise limited to the profits derived from the complainant's patented improvement separated from those derived from the improvements patented to others.

"But where the complainant's patent secures a new combination or a new machine which accomplishes a result never attained before it was invented, the entire profits derived from the infringing device are recoverable, for, since no combination or device existed before the invention by which the desired object could be attained, there is no combination or device but the inventor's to which the profits can be lawfully attributed. *Crosby Steam Valve Company v. Safety Valve Company*, 141 U. S., 441, 448, 449, 454; *Brennan & Company v. Dowagiac Mfg. Co.*, 162 Fed., 472, 475, 89 C. C. A., 392, 395; *Dowagiac Mfg. Co. v. Superior Drill Company*, 162 Fed., 479, 481; *Elizabeth v. Pavement Company*, 97 U. S., 126; *Manufacturing Company v. Cowing*, 105 U. S., 253; *Hurlbut v. Schillinger*, 130 U. S., 456; *Warren v. Keep*, 155 U. S., 265; *Ruggles v. Eddy*, 20 Fed. Cases No. 12,116; *Zane v. Peck*, 13 Fed., 475; *Fifield v. Whittemore*, 33 Fed., 835; *Creamer v. Bowers*, 35 Fed., 206; *Orr & Lockett Hdwe. Co. v. Murray*, 163 Fed., 54, 56. I am unable to escape the conviction that the case in hand falls under the latter rule. The claim upon which this suit is founded is for a patented combination of old elements. It is not restricted to the open spaces between the plates or to the inclosing case, or to anything but the association of all the elements described and claimed. Neither the open spaces between the plates, nor the tubes, nor the plates, nor the coils, nor the oil, nor the spaces between the coils, nor any other details of the combination is patented by this fourth claim of the patent. Any one may use without infringing this claim not only these details, but also any one or all but one of the essential elements of the combination. The thing patented is one, single and entire. It is the combination of all the essential elements into the entire new converter which the combination produces. No one can infringe this claim of the patent who does not appropriate this entire new combination and this machine which that combination produces. And as this new combination and the converter it produces accomplished a

result never attained before, a result that no known device or combination open to the public while the infringement here in controversy was continuing, would produce, this case is not governed by the rule applicable to slight improvements on old machines which accomplished the same result before as after the patented improvement illustrated by *Garretson v. Clark*, 111 U. S., 120, and other cases of that class, but the complainant is entitled to all the profits which the infringer derived from the appropriation of the new combination and machine. *Brennan & Company v. Dowagiac Mfg. Company*, 162 Fed., 472, 475; *Yesbera v. Hardesty Mfg. Co.*, 166 Fed., 120, 125, and cases of that class cited above."

The balance of Judge SANBORN'S opinion discusses the question of confusion of profits and has already been quoted by us at pages 66–68, *supra*, in that connection.

CONCLUSION.

In conclusion, we desire to submit :

1. That the invention in suit is one of such novelty and importance as to mark a distinct step in the progress of the art, as distinguished from a mere improvement or perfection of what had gone before, and, therefore, the patentee was entitled to a broad construction of the claim in suit and a liberal application of the doctrine of equivalents.

2. That as claim 4 in suit has been constructed broadly by the Circuit Court of Appeals for the Second Circuit in the Carbide case, and narrowly by the Court of Appeals below in the case at bar, and therefore is susceptible of two constructions, the former should be adopted in order to preserve to the patentee his actual invention.

3. That Respondent is estopped by the prior adjudication in the Carbide case from contending that claim 4 in suit is a detailed limited claim and does not cover, in connection with the transverse open spaces in the core, longitudinal open spaces between the inner ends of the core plates and and the coils, as additional means for carrying out the purpose of the invention.

4. That the entire saleable value of the infringing converters was due to the presence therein of the invention in suit, and that the Petitioner is entitled to recover Respondent's entire profits thereon.

5. That so far as affording an opportunity for the circulation of the oil in the interior of the converter, the slight open spaces between the inner ends of the core plates and the coils in the infringing converter, was a mere carrying forward of the idea of the invention in suit, and the burden of proving its value and apportioning the profits due to it, was upon Respondent and not upon Petitioner.

6. That the presence in the infringing converter of the slight open spaces between the inner ends of the core plates and the coils, by reducing the efficiency of the converter, was detrimental to its operation, and, therefore, was not the source of any profits.

7. That Respondent confused its profits on the infringing converter with the profits of its general business, and suppressed evidence whereby such profits might be ascertained, and, therefore, the Master was justified in estimating the profits.

8. That upon the testimony before him, the Master was justified in estimating defendant's profits on the infringing converters at 25% of the cost of labor and material.

9. That no error or mistake affecting the accuracy of the Master's conclusions is shown by the testimony, and that the same should therefore be affirmed.

10. That the rule laid down in *Garretson v. Clark* is not applicable to this case.

11. That Respondent is not entitled to a credit for the cost of rebuilding some of the infringing converters, and that the evidence in support of such a claim is insufficient and incompetent.

12. That Petitioner is entitled to recover the sum of $132,-433.35, the amount of Respondent's profits on the infringing business as found by the Master, with interest of 6 per cent. from July 29, 1907, the date of the Master's report.

Petitioner therefore prays this Honorable Court that the decree of the Court below may be reversed, and that it may be ordered to enter a decree against Respondent and in favor of your Petitioner for the sum of $132,433.35, with interest at 6 per cent. from July 29, 1907, the date of the Master's report.

PAUL BAKEWELL,
THOMAS B. KERR,
Counsel for Petitioner.

January 10, 1912.

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SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1911.

No. 179.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PETITIONER,

vs.

WAGNER ELECTRIC & MANUFACTURING COMPANY, RESPONDENT.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE EIGHTH CIRCUIT.

BRIEF FOR RESPONDENT.

History of the Litigation.

I. On July 12, 1887, letters patent No. 366,362, involved in this suit, were granted to George Westinghouse, Jr., for Improvements in Electrical Converters. A copy of this patent is found in the transcript (p. 171).

The patent states, line 9 (italics ours):

> "The invention relates to the construction of a class of apparatus employed for transforming alternating

or intermittent electric currents of any required character into currents differing therefrom in certain characteristics. Such apparatus are usually termed 'induction coils' or converters.

"The object of this invention is to provide a simple and efficient converter which will not become overheated when employed for a long time in transforming currents of high electro-motive force, and which will be thoroughly ventilated.

"In the accompanying drawings, Figure 1 is a cross-section, and figure 2 is a longitudinal section, of a converter involving the features of the invention.

"Referring to the figures, A represents the *core*, of the converter (*) and C′ and C2 the respective *coils*. The *core* is preferably composed of thin plates of soft iron *a a* separated individually or in pairs from each other by thin sheets of paper or other insulating material."

(Here follows a detailed description of the preferred mode of applying the insulating material to the plates, unnecessary to be further noticed.)

Line 41:

"The plates are preferably constructed with two rectangular openings e' and e^2 through which the wires pass. For convenience in inserting the coils, or rather in applying the plates to the coils after the latter have been wound, a cut is made from each opening as shown at *b b*. By bending the ends *c c* upward the plates may then be thrust into position, and the ends *c c* then close about the coils."

(Here follows a disclaimer by the patentee of inventorship of the form of the plates, in favor of one Albert Schmid.)

Line 56:

"Each *group* of—say five or six—*plates* thus applied is preferably separated from the succeeding *group* by *air-spaces*. These may be produced by

(*) Note that the letter A has a line leading from it to one of the sections of plates of which the *core* is composed.

passing tubes *f' f'* which may be of soft iron or other metal, or of vulcanized fiber, *along the lengths of the plates*. It may be sufficient in other instances to *block the group of plates* apart at intervals instead of extending the tubes the entire length. Preferably also the *primary and secondary coils* C' C^2 are separated from each other in a similar manner. In this instance blocks or tubes f^2 of non-conducting material are used. The tubes may be perforated, as shown at f^3, f^3. Where the converter is to be used in open air, the tubes *f'* and f^2 would permit a free circulation of air, and thus aid in keeping the converter cool.

"It may be preferred in some instances to surround the converter with some oil or paraffine, or other suitable material, which will assist in preserving insulation and will not be injured by heating. This material when in a liquid form circulates through the tubes and the *intervening spaces* of the *coils* and *plates* and preserves the insulation, excludes the moisture, and cools the converter.

"The entire converter may be sealed into an enclosing case H, which may or may not contain a non-conducting fluid or gas."

The claims of the patent are as follows:

1. The combination, substantially as described, of a soft iron core, and parallel *primary and secondary coils* having an *open space* intervening between *them*.

2. The combination, with the primary and secondary coils of an electric converter, of a *core* composed of *laminæ of soft iron* arranged in *groups*, said *groups* being separated by *open spaces*.

3. In an electrical converter, a *core* composed of *soft iron plates* arranged in *groups* and *open tubes intervening*.

4. The combination, substantially as described, of an electric converter constructed with *open spaces* in its *core*, an inclosing case, and a non-conducting fluid or gas in said case

adapted to circulate through *said spaces* and about the converter.

5. The combination, with the primary and secondary coils of an electric converter, of a *core* composed of magnetically separated *laminæ of soft iron* arranged in *groups*, the different *groups* being *separated* from each other by *air spaces* and the laminæ of the several groups being arranged in different parallel planes.

II. On the 10th day of May, 1900, suit was brought on this patent in the United States Circuit Court for the Northern District of New York by the petitioner, Westinghouse Electric & Manufacturing Company, as assignee of the patentee, against Union Carbide Company, for the use of converters or transformers made by the respondent, Wagner Electric Manufacturing Company, a corporation of Missouri, and sold to the Carbide Company, for use by the latter at its plant, at Niagara Falls, New York.

III. The Wagner Company took the management and control of the defense of that suit against its customer, the Carbide Company, employing its own counsel and bearing all the expenses of the suit.

IV. Each of the converters or transformers complained of in the Carbide case had a *core*, composed of groups of parallel soft iron plates and *open spaces* between the groups of core plates, produced by blocking apart such *groups* of plates, and each *also* had *open spaces* between its *primary and secondary coils* and other *open spaces* between its *coils* and its *core*.

Furthermore, each of said converters was placed in an oil-filled sealed enclosing case. (Layman, p. 53, Q. 18 *et seq.*)

V. In the Carbide case the only claim of the patent put in issue and submitted to the judgment of the court was claim 4, which reads as follows (italics ours):

"4. The combination, substantially as described, of an electric converter constructed with *open spaces* in its *core,* and inclosing case, and a non-conducting fluid or gas in said case adapted to circulate through *said spaces* and about the converter."

VI. In the Carbide case the defense relied upon was the invalidity of the Westinghouse patent, in view of the prior state of the art. Assuming the validity of the fourth claim of the patent, infringement by the defendant was conceded, since the converters complained of indubitably and confessedly had "open spaces in its core," *i. e.,* "open spaces between the *groups* of parallel soft iron plates composing its core," "an inclosing case," and "a non-conducting fluid or gas in said case adapted to circulate through *said spaces* and about the converter."

VII. The judge of the circuit court, Judge Hazel, held claim 4 of the patent to be valid and infringed. In his opinion, handed down November 11, 1901, he said (112 Fed. Rep., 417-423):

"The Westinghouse patent stated that the plates are preferably separated, and that it may be preferred in some instances to surround the transformer with oil or paraffin or other suitable material. It is stated by the patent that 'the converter or transformer may be sealed in an enclosing case, and may or may not contain a non-conducting fluid or gas.' It is insisted that these are matters of preference or recommendation only, and do not constitute essential features of the patent, but this, however, must be read with claim 4 of the patent. It is quite true that a feature which is mentioned only by way of recommendation in describing an invention must usually be considered as a subordinate, and not an essential, part of the patent (citing cases). But the claim upon which complainant relies still clearly indicates the intention of the patentee to claim as essential the features described by the specifications as preferably employed."

VIII. On appeal to the Circuit Court of Appeals for the Second Circuit the decree below was affirmed. Judge Townsend, in writing the opinion for the Court of Appeals, said (117 Fed., 495) (italics ours):

P. 496:

"The object of the Westinghouse improvement is stated by the patentee as follows:

> " 'The object of this invention is to provide a simple and efficient converter which will not become overheated when employed for a long time in transforming currents of high electromotive force, and which will be thoroughly ventilated.'

"The patentee primarily proposed to obviate the serious objection of loss of energy by overheating involved in such transformation by separating the plates of the core and the primary and secondary coils from each other, so as to permit of ventilation. *This construction adapted for ventilating purposes is covered by the other claims not in suit, and is not involved herein.* The particular construction which is the subject of the fourth claim, the only one involved herein, is suggested as follows:

> " 'It may be preferred in some instances to surround the converter with some oil or paraffin or other suitable material, which will assist in preserving insulation, and will not be injured by heating. This material, when in a liquid form, circulates through the tubes and the intervening spaces of the coils and plates, and preserves the insulation, excludes the moisture and cools the converter. The entire converter may be sealed into an inclosing case H, which may or may not contain a non-conducting fluid or a gas.'

"Said claim is as follows:

> " '4. The combination, substantially as described, of an electric converter constructed

> with open spaces in its core, an enclosing case, and a non-conducting fluid or gas in said case, adapted to circulate through said spaces and about the converter.'
>
> "*Complainant contends* that the claim covers a transformer whose surfaces are cooled by means of oil circulating through *said open spaces in said core* and confined in said inclosing case." (Italics ours.)

Again (p. 497):

> "We have, then, in the prior art every element of the combination claimed and a physical combination of the same elements, except that the separations in Stanley are not adapted to, and the construction of the inclosing case is prohibitive of, the purposes of the claim in suit. *This* claim covers such an inclosing case as will confine the non-conducting fluid, and such *open spaces* in the *core* as will permit the circulation of the liquid through them." (Italics ours.)

IX. The opinion of the Court of Appeals in the Carbide case was handed down May 29, 1902. In June, 1902, the transformers which were the subject of litigation in that case were changed by eliminating the spaces in their cores; or, in other words, by clamping all the core plates close together (Wells, p. 442, Q. 73, *et seq.*). A cut of the transformer as originally constructed, and before the spaces between the core plates were removed, is in the record (p. 108).

X. The Wagner Company discontinued the manufacture and sale of transformers having spaces in the cores in September, 1901, or before the adjudication of the patent by Judge Hazel in the Carbide case (Layman, p. 312, Q. 26), and sold no such transformers after November, 1901 (Layman, p. 328, Q. 78, *et seq.*).

XI. On June 24, 1902, the petitioner, the Westinghouse Company, brought the present suit against the Wagner

Company in the United States Circuit Court for the Eastern District of Missouri, for infringement of the Westinghouse patent and at once moved for a preliminary injunction, which was granted, the defendant consenting thereto.

The affidavits used by the Westinghouse Company in support of this motion are found in the record (pp. 119-124).

From them it appears clearly that the transformers sought to be enjoined, under the motion, were such as had been furnished to the Carbide Company, namely, transformers with open spaces between the plates of the core. In the affidavit of H. J. Jenks (p. 127), for instance, the defendant's transformers complained of is described as like that shown in the *American Electrician* of January, 1900, pp. 12, 13, 14, shown in the record (p. 108). The affidavit of Thomas B. Kerr (p. 131 *et seq.*) refers to an affidavit of W. A. Layman, of the Wagner Company, presented by the defendant in the Carbide suit to secure a stay of the injunction in that suit pending appeal, as showing that the Carbide Company's transformers enjoined in the Carbide case were made by the Wagner Company, and appends a copy of said Layman affidavit as an exhibit (p. 134). There is no allusion in any of the affidavits to a transformer that had spaces between the coils and between the coils anad the core *and no spaces in the core.*

XII. On October 6, 1902, the Wagner Company filed its answer to the bill of complaint in the suit against it (p. 8), and on November 3, 1902, the Westinghouse Company filed its replication, thus putting the cause at issue. An understanding was then had between counsel that no evidence should be taken until one side or the other desired to proceed with the litigation.

XIII. After the lapse of nearly a year, or in May, 1903, the Westinghouse Company suddenly came forward with a motion to punish the Wagner Company for contempt be-

cause of its alleged violation of the injunction against it (to which, as above stated, it had consented), by the manufacture and sale of transformers like the Carbide Company's *altered* transformers, namely, transformers having spaces between its coils and between its coils and its core, *but no spaces between the plates or groups of plates of its core;* and also moved that the further manufacture and sale of such transformers be enjoined.

XIV. Although the Wagner Company had been, since 1897, openly making and selling transformers of the construction complained of in this contempt proceeding this was the first intimation that such transformers were regarded as within the Westinghouse patent.

Mr. Layman, general manager of the Wagner Company, testified that (p. 51) the Wagner Company's catalogue, known as "Defendant's Exhibit No. 3, Catalogue No. 102, Wagner Electric Manufacturing Company Bulletin No. 43, dated 1901" (shown at page 135), containing a disclosure of the alleged infringing transformer, was issued in 1901, and that not less than 5,000 copies of it were distributed throughout the United States. He also testified (p. 52, Q. 8) that the Wagner Company had been manufacturing oil-cooled transformers having spaces between the coils and between the coils and the core, *but without spaces in the core,* for about eight or ten years prior to his time of testifying (1903) and that, to his knowledge, all builders of oil-filled transformers had made such transformers for ten years previously. There was no contradiction of this.

Mr. Layman also produced and identified (Q. 10-11, p. 52) one of the Wagner Company's circulars issued in 1897, describing oil-filled transformers having spaces between the coils and between the coils and the core, and said that not less than 3,000 and probably as many as 5,000 of these circulars were distributed to the public. As to the circularizing

of the trade in regard to these transformers Mr. Layman was corroborated by Mr. Wells, consulting engineer of the Wagner Company (p. 47, Q. 10 and 12).

Mr. Beam, one of the Westinghouse Company's witnesses in the employ of the expert of the Westinghouse Company, Mr. Jenks, admitted that as early as March, 1901, when he testified in the Carbide case, he understood that the Wagner Company had made oil-filled transformers with open spaces between the coils and between the coils and the core, but without spaces in the core (pp. 103, 104, X Q. 20 and X Q. 23).

Mr. Jenks, in his affidavit on the first motion for preliminary injunction in this case, had stated:

P. 121:

> "I keep myself informed generally regarding the practical development of the electrical art and the apparatus made by the principal manufacturers in the United States. I have had particular occasion to investigate transformers (or converters) manufactured by the Wagner Electric Manufacturing Company of St. Louis. I investigated critically apparatus made by that company in preparation and connection with my deposition in the Union Carbide cases above referred to which involved apparatus made by the said Wagner Company and the suits were, as I have been credibly informed and verily believe, defended by the said Wagner Company."

XV. In disposing of this motion to punish for contempt and the motion for preliminary injunction Judge Amidon said:

P. 147:

> "It has been made to appear to my satisfaction in this suit that counsel for the defendant, as well as the officers of the defendant, understood that that was the full scope of the relief that was sought on the application for the preliminary injunction, namely, a restraint of the further manufacture of the device

which was involved in the suit in New York. Counsel for the defendant appeared in court in the present suit and consented to the granting of the injunction, which was issued in June, 1902. It appears from the evidence in the present case upon this hearing that the defendant, The Wagner Electric Manufacturing Company, had been engaged for some five years in the manufacture of the device which is now complained of. It further appears that the defendant, in order to obviate the infringement which was established in the suit in New York, transformed all its converters which had been manufactured in conformity with the device here in evidence to the form of the device now complained of. It has gone forward in the manufacture and sale of these devices. In so doing I am satisfied that it has acted in the utmost good faith and under the advice of counsel. I am more inclined to accept as entirely true the representations of the defendant in this regard from the fact that the defendant had been engaged for some five years in the manufacture of the same device, had advertised it extensively to the trade, and had sold it throughout the country without any complaint on the part of the complainant.

"It is quite manifest that no showing has been made here which would justify the punishment of the defendant for contempt for a violation of the preliminary injunction."

XVI. In denying the motion for preliminary injunction as against the transformers in question Judge Amidon also said:

P. 148:

"It is charged that this device violates the fourth claim of the complainant's patent. That claim reads as follows:

" 'The combination, substantially as described, of an electric converter, constructed with open spaces in its core, an enclosing case and a non-conducting fluid or gas in such case, adapted to circulate through said spaces and about the converter.'

"The defendant's device *has no open spaces in its core;* the cooling liquid does not circulate through any such spaces. On the contrary, the defendant has sacrificed efficiency in its device and placed the spaces between the core and the coils through which the cooling liquid is supposed to circulate. It is manifest from a consideration of the specifications of the Westinghouse patent that the open spaces in the core is a prominent and distinctive feature of that patent. And that the defendant's device does not contain that element." (Italics ours.)

XVII. When this case against the Wagner Company came on for final hearing, before Judge Adams, that learned judge decided that the true interpretation of the fourth claim of the Westinghouse patent in suit required that that claim be limited to a transformer having open spaces in its core, that is to say, between the groups of plates composing its core, as distinguished from a transformer which had open spaces between its coils and open spaces between the coils and the core. He, therefore, held that the transformers that had been made and sold by the defendant, which had open spaces between the groups of plates constituting the core, like those transformers that had been sold to and used by the Union Carbide Company and that had been enjoined in the Carbide suit, were infringements of the said fourth claim, and he ordered an accounting as to such transformers.

The learned judge held, however, that those transformers that had been made and sold by the defendant *that had no spaces in their core*, but that had spaces between the coils and spaces between the coils and the core, were not covered by the said fourth claim, were not infringements of said fourth claim, and he refused to order an accounting as to such transformers (p. 570).

XVIII. The opinion filed by Judge Adams (page 563) shows that he had made a most careful examination of the Westinghouse patent; of the history of litigation that had

taken place under it; of the practical interpretation that had been given it by the Westinghouse Company and its counsel; and of the understanding that the Wagner Company and its counsel had had of it and had acted upon for a long course of years. It is a very able opinion and well worthy of its author and of the occasion. In it the learned judge first recites the proceedings in the litigation known as the Carbide case. He then refers to the specification of the patent, recites claim 4, and says that—

> "Complainant claims that the converter, now commonly called a transformer, manufactured by the defendant infringes claim 4 in three particulars:
>
> "First. Because there is an open space between the coils themselves.
>
> "Second. Because there is a rectangular opening inside of the core through which the coils pass, and
>
> "Third. Because there are open spaces between the core and the coils."

He then goes on to say:

> "The question for determination is: whether either of these three spaces or openings constitute 'open spaces' in its core within the true meaning of claim 4 of the patent."

He then says:

> "I have reached the conclusion that the defendant's transformer does not by reason of either one or all of the above-mentioned features have 'open spaces in its core' within the true meaning of the patent in suit, for the following reasons:
>
> "First. The fact that there is a space between the two coils when inserted in the core is not an infringement of claim 4, for the most obvious reason that claim 4 calls for no such space, and for the quite equally obvious reason that claim 1, which is not now in controversy, does contain that element.
>
> "From these two facts it is altogether probable that the patentee did not himself understand or in-

tend that claim 4 should be construed as containing the element.

"After a careful reading of the opinion of the Court of Appeals in the Carbide case, 117 Fed., 495 (which it is conceded by counsel to be binding upon the defendant in this case), I find no reason for reading the element of 'open space between the coils' into claim 4.

"Second. The drawings and description of complainant's patent, as well as the models shown in evidence and used in argument show a device in which the coils completely fill the opening in the surrounding core and in which parallel open spaces a few inches apart appear in the substance of the core extended throughout its body in such way as to permit the oil in which the transformer is submerged to freely circulate about the surrounding core and into the interior. A longitudinal section of this device is shown in figure 2 of the drawings of the patent, which is as follows:

(Here was inserted a cut of figure 2 of the patent.)

"These numerous parallel open spaces so shown in the drawings and model, and any other open spaces whether parallel or not cutting through the body of the surrounding core and extending into the interior opening containing the coils, are, in my opinion, the 'open spaces in its core' contemplated by claim 4.

"The purpose of these open spaces as disclosed by the patent and the evidence of experts is to permit the oil to so bathe the heat-producing surfaces of the transformer, and to so circulate throughout the parts of the transformer as to preserve the insulation of the coils and radiate the heat generated by the transformer's action.

"The use of oil or paraffin in a tank enclosing the transformer for the purpose just specified has been long known to the art and is recognized by at least two patents prior in date to complainant's patent.

"Accordingly, the invention has for its main purpose only the physical means for effectually securing this circulation of oil. It deals with the core itself and divides it up into groups of plates, each group

separate from the other in such way as to make numerous parallel open spaces in the core leading from its outer surface on all its four sides into the interior opening made for the introduction of the coils. This interior opening called in the patent 'two rectangular openings e' e^2 through which the wires pass' is not, in my opinion, an 'open space in its core' within the meaning of claim 4.

"I adopt the views of Prof. Nipher with respect to this rectangular opening. He says:

" 'The core is not the core of a transformer or converter until these rectangular openings are made through it.' "

He says further:

" 'These openings give character to the core. It is not a core until they exist there.'

" 'The core is in fact given such a form that it surrounds the coil in a certain sense, and the space so surrounded by the core might be called a "coil opening." ' The core of a transformer is the iron part of it. It must be so constructed as to permit the introduction of the coils of wire approximately through its center. The wire coil must be put in to make a transformer. I cannot understand how this space left in the inside of the iron for this purpose can be an open space in the core. It might be as well said that the space left on the outside of the core between it and the encasing tank, is an open space in the core.

"The defendant's device has a space between the coils and has also this rectangular opening for the introduction of the coils into the core, but for the reasons above expressed these are not 'open spaces in its core' within the meaning of the patent in suit.

"Third. The defendant's device also has certain open spaces between the core and the coils, as shown in its model in evidence. The complainant's device has no such spaces. Complainant's core hugs the coils closely, and thereby secures greater efficiency of action. But it is contended that these spaces between the core and the coils are the mechanical equivalent of the spaces in the core already considered. I can-

not agree to this view of the case. They are physically two different things. One (the complainant's) has the spaces cut in the core throughout its whole substance, thus permitting the oil to percolate copiously into all heat-producing surfaces. The other (the defendant's) has its spaces inside the core between its inner surface and the outer surface of the coils, thereby releasing the grasp of the core upon the coils and decreasing the efficiency of its transforming action."

The learned judge then goes on to say what the Westinghouse patent is *not*.

"If the patent in suit were a broad and valid patent for a circulatory system throughout the heat-producing parts of a transformer the two devices might be the mechanical equivalent, but it is not such a patent. It is distinctly a patent for a machine involving physical elements, and I cannot bring myself to think the spaces of the defendant's device between the core and the coils are the same as the open spaces in the core of complainant's device or the mechanical equivalent thereof. They may perform the same function, but they do it by means of different physical elements, and the defendant's device is constructed at the expense of efficiency, which the complainant's device avoids.

"The problem for years before the grant of complainant's patent was to devise efficient means for cooling heat-producing surfaces of the transformer, and for protecting the insulation of the coils.

"The complainant invented the physical means shown in claim 4. The defendant adopted the totally different physical means shown in its model.

"In view of the foregoing I cannot construe the opinion in the Carbide case as giving the complainant the monopoly of all means by which the external and internal surfaces of the heat-producing parts of a converter can be cooled. This view would preclude the use of any and every other device looking toward the accomplishment of the main object, namely, the circulation of oil throughout the heat-producing

parts of the converter. The opinion in that case uses the language that the patentee was 'entitled to claim the means for accomplishing that object,' manifestly referring to the means claimed in claim 4 and described in the patent, namely, of opening up the core itself in the way already pointed out, leaving all other means (not the mechanical equivalent however) open to the free use of the public.

"I think the construction which I have already placed on claim 4 is the one which complainant itself placed upon that claim for years, and in fact until the spring of 1903, when it moved in this case for a rule to punish the defendant for contempt."

The learned judge then proceeds to refer to the British patent of Westinghouse, taken in 1887, on the same date the patent in suit was granted. This British patent is found in the record (page 261 *et seq.*). He says:

"In 1887 on the same date the patent in suit was granted the patentee, George Westinghouse, Jr., secured a British patent for a device of similar construction to that employed in the defendant's transformer. The drawings and claims of that British patent show a transformer with open spaces between the coils and between the coils and the core. Claims 10 and 11 of that patent distinctly call for 'strips of insulating material extending along the sides of the coils and separating the same from the surrounding core.'

"The American and British were applied for and secured at the same time. Accordingly, it is obvious that the patentee had in mind the construction involved now in defendant's device and he deemed it important enough to be made the subject of a separate patent. To give him now the monopoly of this construction by virtue of his American patent would, in my opinion, give to him something which he intentionally failed to claim when he secured it, and which he obviously then thought should be specifically claimed in order to secure it."

He then comments upon the practical construction of the claim given to the claim by the complainant:

> "Again it clearly appears that the defendant was engaged in making its transformer for some years prior to the hearing of the Carbide case, and that the witnesses in that case knew of this fact. They certainly knew that defendant was manufacturing a transformer with an open space between the coils and a rectangular opening into the core for the insertion of the coils. But no attempt was there made to hold these features to be an infringement of claim 4 of the patent. Complainant there contented itself by claiming the parallel open spaces throughout the core itself to be an infringement.
>
> "After the judgment was rendered in that case the complainant, with full knowledge that the defendant was manufacturing transformers with the open spaces and openings now claimed to be an infringement of claim 4, never sought to hold the defendant guilty of contempt for violation of the injunctive order in that case. After that injunctive order became final the defendant conformed thereto by changing its transformer so as to close up all the parallel open spaces throughout the core itself, leaving the core one solid mass of iron plates with no open spaces in it, but retaining in its structure the open spaces between the coils and between the core and coils as before, and has continued to manufacture such transformers so modified from that day to this.
>
> "The proof shows no claim that the use of this modified structure constituted a violation of the injunctive order in that case.
>
> "Soon afterwards the present suit was instituted and a preliminary injunction was granted against the defendant restraining it from infringement. This restraining order was consented to by defendant under the belief that it related exclusively to the same kind of transformer which was declared an infringement in the Carbide case, and I am satisfied that counsel on both sides so regarded it at the time.
>
> "In due time after the institution of this suit the defendant filed an answer admitting that the judg-

ment in the Carbide case was an estoppel against it as to the validity of claim 4, and consenting to a final decree enjoining it from infringing that claim. At about this juncture complainant and defendant by counsel came to an understanding that neither party should take any evidence until further notice. The case remained in this condition for about a year and in the meantime defendant refrained from manufacturing or selling the transformer condemned as an infringement in the Carbide case, but continued to manufacture and sell the transformer now claimed to be an infringement. This condition of things remained until May, 1903, when a motion was made to punish defendant for contempt on the ground that the manufacture and sale of its present transformer was a violation of the preliminary injunction granted in this case. This motion was denied and since then proofs have been taken and the cause is now submitted for a final decree. All of these facts convince me that complainant's present claim that defendant's present transformer is an infringement of claim 4 of its patent is an afterthought on its part, and that from the date of its British patent in 1887 to the date of filing the motion to punish defendant for contempt in May, 1903, the complainant continuously interpreted claim 4 of its patent as not covering the defendant's device now in question. This seems to me to be such a contemporaneous and continuous construction put upon claim 4 of the patent by complainant, and one upon which defendant has innocently acted, that complainant ought to be estopped at this late day from asserting the contrary.

"The patent in suit has only about five months longer to run. It expires on July 12th of this year. To now enjoin the defendant after it has been manufacturing, selling and advertising the transformers complained of for a period of about eight years, as shown by the testimony, and under the circumstances disclosed by this record, would, in my opinion, be grossly inequitable."

The learned judge then stated his conclusions as follows:

> "My conclusions are:
>
> "First. That the transformer now being used by the defendant is not within the true meaning of the patent itself an infringement of claim 4.
>
> "Second. The construction which I have placed upon this claim is in harmony with the contemporaneous and continuous construction placed upon the same claim by the patentee himself and by the complainant.
>
> "Third. The complainant by its own conduct is estopped from claiming the contrary."

COMPLAINANT'S LACHES BAR SUIT AS TO TRANSFORMERS WITHOUT CORE SPACES.

XIX. The conclusion reached by Judge Adams that the delay of the complainant in asserting, for the first time, after over eight years' knowledge of the facts, that defendant's transformers having open spaces between the coils, but no open spaces in the cores, were infringements of the complainant's patent, was so inequitable as to be abhorrent to a court of equity, is well sustained by authority.

Lane & Bodley Co. *vs.* Locke, 150 U. S., 193-200.

McLean *vs.* Fleming, 96 U. S., 245.

Menendez *vs.* Holt, 128 U. S., 519.

Richards *vs.* Mackall, 124 U. S., 183.

Godden *vs.* Kimmel, 99 U. S., 201.

Galliher *vs.* Cadwell, 145 U. S., 368-372.

Gildersleeve *vs.* New Mexico Mining Co., 161 U. S., 573-578.

McLaughlin *vs.* Peoples Ry. Co., 21 Fed., 574.

York *vs.* Passaic, etc., Co., 30 Fed., 471.

Westinghouse Air Brake Co. *vs.* N. Y. Air Brake Co., 111 Fed., 741.

Such laches has been held a sufficient reason to refuse an accounting even where injunctive relief has been granted.

McLean *vs.* Fleming, 96 U. S., 245.
Menendez *vs.* Holt, 128 U. S., 514.
Woodmense & Hewitt Mfg. Co. *vs.* Williams, 15 C. C. A., 520.
Price *vs.* Steel Co., 46 Fed., 107.
Low *vs.* Fels, 35 Fed., 361.
Cohn *vs.* Gottschalk, 2 N. Y. Supp., 13.

In this case there can be no injunction as the patent has expired.

Court of Appeals Agrees With Judge Adams as to Interpretation of Claim 4.

XX. On the question of the proper interpretation and scope of the fourth claim of the patent the Circuit Court of Appeals for the Eighth Circuit, in this case, agreed with Judge Adams.

Judge Riner, speaking for the Court of Appeals, said, among other things (page 584):

> "Thus, the question is presented whether the open spaces between the coils and between the coils and the core found in appellee's device (type M) can be said to be open spaces in the core within the meaning of claim 4 of appellant's patent. It is not contended that the rectangular openings in the core for the purpose of admitting the coils come within the claim, but it is insisted by appellant that the open spaces between the coils and between the coils and the core are open spaces in the core within the meaning of the claim we are now considering. That claim is for a combination and the rule by which we are to be governed in the determination of the question presented is clearly stated in Water Meter Co. *vs.* Desper, 101 U. S., 322, as follows:

"'It is a well known doctrine of patent law that the claim of a combination is not infringed if any of the material parts of the combination are omitted. It is equally well known that if any one of the parts is only formally omitted and is supplied by a mechanical equivalent performing the same office and producing the same result the patent is infringed.'

"And again, in the same case, the court said:

"'Our law requires the patentee to specify particularly what he claims to be new, and if he claims a combination of certain elements or parts, we cannot declare that any one of these elements is immaterial. The patentee makes them all material by the restricted form of his claim. We can only decide whether any part omitted by an alleged infringer is supplied by some other device or instrumentality which is its equivalent.'"

The learned judge then proceeds to quote with approval the analysis of the claims of the patent in suit made by Judge Bradford in a suit brought in New Jersey, upon this same patent, as follows (130 Fed., 550):

"In Westinghouse Electric Mfg. Co. *vs.* American Transformer Co., *supra,* the Circuit Court for the District of New Jersey, in contrasting the several claims of the patent, one with another, for the purpose of more certainly ascertaining the meaning of claim 4, said:

"'* * * the "spaces" of claim 4 are "open spaces in its core." The "open space" of claim 1 is that intervening between "parallel primary and secondary coils." The combination of claim 2 has as its elements, first, primary and secondary coils; second, a core composed of laminæ of soft iron arranged in groups; and third, "open spaces" separating said groups. This claim, aside from the coils, specifically refers to the construction of the core, but lacks the elements of "an inclosing case" and "a non-conducting fluid or gas in said case adapted to circulate through said spaces and about the converter," included in the combination of claim 4. The elements of the combination of claim 3 are, first, a

core composed of soft iron plates arranged in groups, and, second, "open tubes" intervening. This claim specifically refers to a particular construction of the core, but, like claim 2, lacks two of the elements of claim 4. Claim 5 includes the following elements: first, primary and secondary coils; second, a core composed of magnetically separated laminæ of soft iron arranged in groups; third, "air spaces" separating the different groups from each other, and fourth, the arrangement of the laminae of the several groups in different parallel planes. This claim also specifically refers to a particular construction of the core, but, like claims 2 and 3, lacks the same two elements of claim 4. In the combination of claim 4 "open spaces in its core" as well as an "inclosing case" and a "non-conducting fluid or gas" therein, are "substantially as described." No doctrine of equivalency can dispense with the open spaces in the core of the transformer, for they are a necessary element of the combination. Without them the claim cannot be satisfied. Open spaces might be produced in the core other than those specifically set forth in the drawings or description, which would be the equivalent of the latter. The core itself might, for instance, be cut into in various directions in such manner as to expose what may be termed internal heat-dissipating surfaces to the oil or other medium surrounding the transformer, and in such case, the other requirements of the combination being satisfied, infringement could be found. But the essence of the first element of the claim insisted on is that the open spaces of the transformer must be "in its core." ' "

Then, after quoting with approval the interpretation of the claim by Judge Adams, already referred to herein, the learned judge went on to say (page 586):

> "As already suggested, if we understand appellant's contention, it is that the term 'open spaces in the core' in claim 4 of its patent includes and means spaces between the coils and between the coils and the core, or that such spaces are the equivalent of

spaces in the core. But the trouble with this suggestion is that the claim in suit describes no such spaces and by its particularization impliedly excludes them. In that claim the patentee describes a combination consisting of certain enumerated elements and by that enumeration he is bound.

"The Circuit Court held that the open spaces in the core, as described in claim 4 and the open spaces between the coils and between the coils and the core were physically different things, and that this is so is apparent, as we think, from an examination of the patent as a whole."

ALL COURTS AGREE THAT CLAIM 4 IS A LIMITED CLAIM.

XX. From the foregoing review of the proceedings under this Westinghouse patent it is clear that Judge Hazel in the Carbide case; that Judges Wallace, Lacombe, and Townsend, sitting in the Court of Appeals in the Carbide case; that Judge Kirkpatrick, who denied a preliminary injunction in the American Transformer case in New Jersey (121 Fed., 560); that Judge Bradford, who rendered the opinion at final hearing in the American Transformer Company case; that Judge Amidon, who heard the motion for contempt and for a preliminary injunction in this case; that Judge Adams, who sat at the final hearing of this case, and that Judges Van Devanter and Riner, who composed the majority of the Court of Appeals for the Eighth Circuit in this case, were all of the opinion that the true interpretation of the 4th claim of the patent in suit required that it should be read as a limited claim and restricted to transformers in which there were open spaces in the core—that is to say, between the plates composing the core, as distinguished from open spaces between the coils and between the coils and the core, and it is also clear that this was the interpretation placed upon the claim by the complainant itself and the understood interpretation of the claim by the Wagner Company, the defendant,

for at least eight years, during which period it was openly manufacturing and selling with the knowledge of the complainant and without molestation or charge of infringement, transformers that had open spaces between the coils and between the coils and the core, but that *had not* open spaces in the core itself.

While this interpretation of the claim is of course not binding upon this court it must necessarily be persuasive and the protection afforded by the strong equity of the defendant will not be removed unless this court is satisfied, beyond reasonable doubt, that the former interpretation has been clearly wrong.

Case Referred to Master to State Account.

XXI. The defendant in this case, the Wagner Company, supported and directed the defense in the Carbide case, and, under the authorities, was as firmly bound by the decree in that case as were the defendants of record, but not more so. When, therefore, it was sued in the Eighth Circuit and an injunction was sought restraining its further manufacture and sale of transformers like those that had been enjoined in the Carbide case, it realized that the matters and things adjudicated in the Carbide case were *res adjudicata* and consented to the injunction. Accordingly, the Circuit Court very properly referred the cause to a Master to take and state an account of the profits, if any, growing out of the use of the improvement covered by claim 4, that had been made by the defendant in the manufacture and sale of transformers like those found to be infringements in the Carbide case.

DEFENDANT BEFORE MASTER CONTENDED THAT PATENTED IMPROVEMENT WAS OF SLIGHT VALUE: NOT THAT IT WAS OF NO VALUE WHATEVER.

XXII. The master, in an endeavor to ascertain the profits that had been made by the defendant, necessarily had to consider the *value* of the invention covered by claim 4 of the patent, and the defendant undertook to show that the value of the improvement covered by said claim was slight; not that the improvement was of no value, but that it was of slight value.

The complainant, of course, contended, and here contends, that the whole value of defendants' transformers was due to the presence in them of the specific combination of claim 4; but the fallacy of this will hereinafter be demonstrated.

XXIII. It will not be amiss to here briefly consider what an electrical transformer is.

WHAT TRANSFORMERS ARE.

Transformers are of two kinds—rotary transformers, in which one or more of the parts rotate or move, and static transformers, in which no part of the apparatus moves. The parts of the latter "stand," and such transformer is, therefore, known as a "static" transformer. The patent in suit deals with a static transformer and that, consequently, is the only kind with which we are here concerned. The rotary types of transformers are invariably referred to as "rotary transformers," or as "rotaries," and the static transformer is generally referred to simply as "a transformer," and will be so referred to here by us.

A transformer is an apparatus whereby an electric current is generally transformed or converted from a certain

pressure and quantity to a certain other pressure and quantity. The current may be transformed to the same pressure and quantity, but usually is transformed from a higher pressure and smaller quantity to a lower pressure and larger quantity in order that high, dangerous pressures may be transmitted on the lines outside of buildings and transformed to lower pressures and greater quantities for use in buildings. It is also more economical to transmit high pressure on the lines outside of buildings. A high pressure requires but a small wire to transmit the current, and for that reason also high pressures are used over the line wires leading from the generator at a distance to the points of consumption. Thus a saving of copper in the line wires is effected.

A transformer consists essentially of but two parts; one, an electrical part—the coils which conduct the electric currents; the other, a magnetic part—the iron core, in which, by the current flowing in the coils, magnetism is induced, a magnetic flux being caused to flow in the core. Copper is a good conductor of electricity, but is a non-magnetic metal, whereas iron is a comparatively poor conductor of electricity but is a magnetic metal. For these reasons copper is used to conduct the electric current and iron is used to transmit the magnetic flux. The copper coils constitute the electrical circuits and the iron core the magnetic circuit of a transformer.

There are two coils in the transformer—one, the primary coil, which is connected to the line wires and receives the high-pressure line current, and the other the secondary coil, in which currents are induced by the primary coil, which action is increased by the presence of the core. The current is not conducted from the primary to the secondary coil, there being no physical connection between the two coils. The current used in this class of apparatus is what is known as an alternating current—that is to say, it is a current which does not flow in the same direction con-

tinuously, but alternates, flowing first in one direction and then in the other direction, through the coils many times a second. A direct or continuous current—that is, one which flows always in the same direction if applied to a transformer—would not give rise to the phenomenon known as induction, which requires an alternating current, upon which the operation of a transformer depends. In all electrical apparatus, when a current is transmitted therethrough, heat is generated in both the core and the coils, and this is also true of the transformer.

The effect of the heating of the coils in a transformer is to increase their electrical resistance and hence to increase the copper loss. It is, therefore, detrimental to have a material increase of temperature in the coils. On the other hand, if the core or iron is subjected to a rise of temperature the iron loss decreases, as iron when hot is more easily magnetized and demagnetized by reversals of the alternating current. A rise of temperature of more than 30 degrees above the normal in the core causes aging or deterioration of the iron; lessens its magnetic qualities and in the course of time leads to deterioration of the transformer. Transformers were formerly known as converters and, in still earlier days, as induction coils. The patent in suit says, line 14, "Such apparatus are usually termed 'induction coils' or 'converters.'" Nowadays they are nearly always referred to as transformers because they transform the impressed current. When one speaks of open spaces in the core of a transformer he means, and can only mean, open spaces in the magnetic circuit, as distinguished from open spaces between the electrical parts of the apparatus—the coils. The converse is equally true. If one speaks of a transformer as having open spaces between the coils—the electrical part of the apparatus—he would not mean open spaces in the core—the magnetic part of the apparatus.

To Justify an Award to Complainant it Must Appear that Defendant Realized a Profit from Using the Invention of Claim 4 Over and Above What it Would Have Realized by Using that Which It Had a Right to Use.

XXIV. The point is attempted to be made by the complainant that the defendant had no right to make a comparison between the transformer of claim 4 of the patent in suit and a transformer having open spaces between the coils and between the coils and the core, but no open spaces in the core itself.

The open space between the coils is not, as we have seen, covered by claim 4, and was therefore open to the defendant to use; and the open spaces between the coils and the core, as well as the open spaces between the coils, were not only not covered by claim 4, but were set forth and described in the British patent to Westinghouse, No. 9728, of 1887 (p. 261), granted to the patentee, Westinghouse, on the same day that the patent in suit was granted in the United States, and all said features were therefore public property at the date of the patent in suit, so far as this country is concerned, and remained so during the entire life of the patent.

That the British patent has open spaces between the coils and between the coils and the core was expressly found by Judge Adams in the circuit court (p. 567). Furthermore, Judge Adams found that the defendant had made transformers with such open spaces for some years prior to the hearing of the Carbide case and eight years before the beginning of the present suit (p. 569). Mr. Layman, testifying in August, 1903, page 52, said that all builders of transformers had been making such transformers for ten years.

Six judges, Judge Amidon, Judge Kirkpatrick, Judge Adams, Judge Bradford, Judge Van Devanter, and Judge Reiner, have passed on the patent in suit since the decision

of the Carbide case, and have decided that manufacturers of transformers were at liberty to make and sell transformers having open spaces in them for the circulation of oil, provided such spaces were not spaces in the core; in other words, that such transformers are open to public use. Why, then, we inquire, cannot comparison be made between the transformer of claim 4 and transformers that were open to the public, and therefore to defendant, to use at the date of the patent in suit and that were, moreover, used without molestation by defendant for more than eight years before the bringing of this suit? Such transformers so open to the public are good transformers and the evidence shows are more useful than transformers having open spaces in the core only.

In Calkins *vs.* Bertrand, 8 Fed., 755, 760, the defendant had constructed an apparatus containing the complainant's invention, and another apparatus similar to the same but without the complainant's invention, and had the two tested by persons skilled in the art. The testimony of these witnesses was to the effect that the use of complainant's invention in defendant's machine had no value. The court in that case said:

> "This affirmative proof that defendants made no profits by the use of complainant's device, supplemented to the lack of proof by complainant as to what profits were made by the use of complainant's 'long swing,' certainly makes no record from which it can be said any profits or damages are shown. It cannot be assumed, in the absence of proof, that half or any other share of the profits made by defendants were due to the use of complainant's device."

That case is, in the respect noted, identical with the case at bar. The defendant has had constructed two transformers, one embodying complainant's invention and the other not embodying complainant's invention, the transformers in every other respect being the same in size, material, construction and arrangement. These were tested by Prof.

Langsdorf, of Washington University, and his testimony is to the effect that the one operated about as well as the other. Bearing in mind, also, the testimony of Mr. Wells that he had the Carbide transformers changed by removing the open spaces in the core, and that when so modified the transformers operated about as well as before, and also bearing in mind that the record in this case shows that defendant's transformers, which do not contain complainant's invention, are as salable as those which did contain complainant's invention, and that the cost of manufacturing transformers with and without complainant's invention of claim 4 is practically the same, we do not see how it is possible to find that the defendant has made profit on its transformers due to the patented invention of claim 4.

The case of Maier *vs.* Brown, 17 Fed., 736, is directly in point. The patent was for an improvement in trunks and consisted in covering a trunk with narrow strips of wood. Defendant used the strips of wood. In his report the master allowed the plaintiff the entire profits made by the defendant in the manufacture and sale of the trunks. On exceptions to the master's report the court sustained the exceptions and held that the plaintiff was entitled only to the difference between the profits made by defendant on these trunks over and above the profit made upon ordinary trunks of similar size and general description, and held that inasmuch as the plaintiff made no such proof in the case and had not shown what was the profit due to the patented invention, to wit, the strips of wood, nominal damages only should be awarded. The court in that case said:

> "If the profits upon plaintiff's trunks were no larger than upon an ordinary trunk it would indicate that he had suffered no damages legally capable of estimation. It is true that defendant may have sold trunks which the plaintiff would have sold if defendant had not infringed, but the damages thereby occasioned cannot be inferred without proof."

This case has been cited several times approvingly.

Has the plaintiff in the case at bar shown the profit made by defendant in using the strips of wood to secure the open spaces in the core of converters immersed in a tank of oil?

In Fisher *vs.* Hays, 22 Fed., 529, relied upon in the court below by the complainant's counsel, the court said:

> "The question for the master to settle is the advantage which defendant derived from the use of that part of the patented invention which was infringed over what he had in using other machines *then open to the public,* and this accounting must be confined to an account of the profits received by the defendant as a direct result of the use of that part of the invention which was infringed, and which is specified in the decree. Mowry *vs.* Whitney, 14 Wall., 620; Littlefield *vs.* Perry, 21 Wall., 205."

In the case of Bostock *vs.* Goodrich, 25 Fed., 819, the claims of the patent sued on were for improvements in tuck markers, and were *combination claims.* It appeared that tuck markers differing from the plaintiff's invention had been in use for many years prior to the date of the patent sued on. The *complainant simply improved the old machines, rendering them more serviceable than before.* The court held that the plaintiff, having failed to show what were the profits due to his improvements, was entitled to nominal damages only.

In Reed *vs.* Lawrence, before the Circuit Court for Western District of Michigan, Southern Division, 29 Fed., 915, the court said:

> *"If the manufactured article embodies the use of other valuable features not patented to the complainant, but which have contributed to its market value, whether such other features are patented to any other person or not, the defendant is not liable for the use of them to the complainants.* If such other features are patented to some third party, that person is the one entitled to recover for that infringement to the

> extent which his patented device has contributed to the defendant's profits. *But if, on the other hand, those other qualities are not patented at all, then the defendant, in common with the general public, has a right to apply them to his business and make the most he can of them. * * * Of course it can make no difference in the rule whether the unpatented features were in use before or only since the patent was obtained. In either case the public are entitled to use them and the patentee, therefore, has no right to recover damages which include such use."*

THE BURDEN OF PROOF IS ON COMPLAINANT TO SHOW PROFIT DUE TO IMPROVEMENT COVERED BY CLAIM 4.

In Tomkinson *vs.* Willets Mfg. Co., 34 Fed., 536, the patent was for a peculiar square-shaped dish. The court held that the complainant was not entitled to the entire profits made on the infringing dish and that such an estimate of profits was erroneous, but that the complainant should show what were the profits due to his peculiar shaped square dish over other square dishes. The court in that case said:

> "It may be that complainant may find it difficult, if not impossible, to prove the amount of such profit, but that is a difficulty inherent in the particular kind of patent which he holds. *One who by some lucky chance secures a patent for 'the mere shadow of a shade of an idea' should not be disappointed if the grant, even though uncontested, subsequently proves of no appreciable pecuniary value."*

The Circuit Court of Appeals has spoken to the same effect.

In Mosher *vs.* Joyce, 51 Fed., 441, Court of Appeals of the Sixth Circuit, the invention related to lifting jacks. The master allowed the complainant the entire profits on the infringing jacks. The lower court and the appellate court

ruled that the complainant's patent was for an improvement only, and not for an entirely new machine, and that, inasmuch as the complainant had not shown what was the profit due to the patented invention, nominal profits only should be awarded. The court adopted the doctrine laid down in Garretson *vs.* Clark and Dobson *vs.* The Carpet Company, *infra,* as controlling, saying:

> "Having failed to prove by reliable and tangible evidence that the entire value of the infringing jack, as a marketable article, was properly and legally attributable to his patented feature, the court cannot indulge in conjecture or speculation in order to give him the entire profits made by the defendants. It was open to complainant to show that defendants had received an increased price for their infringing jacks, which was fairly attributable to his patented improvement, or that the infringing jacks derived their entire value, as marketable articles, from his invention. He has failed to do either, and we are clearly of the opinion that the decree below was therefore correct and should be affirmed, with costs of appeal, and it is accordingly so ordered and adjudged."

In Robbins *vs.* Illinois Watch Company, 81 Fed., 957 (Court of Appeals of the Seventh Circuit), the defendant, a watchmaker, made hand-setting and stem-winding devices, and sold the movement as an *entirety.* The court held there could be no recovery of profits in the absence of proof separating the profits made on those devices from that made on the rest of the watch movement.

The case of Wales *vs.* Waterbury Mfg. Co., 101 Fed., 128, relied upon by the complainant's counsel, in the court below, is a case which was decided by the Court of Appeals of the Second Circuit, the opinion being written by Judge Wallace. In that case, it was held that an infringer is liable for the entire profits made on an article containing the patented combination, where it appears but

for the patented combination the article would not be salable.

It is true that Judge Wallace in his opinion says:

> "An infringer is a trustee *ex maleficio* for the owner of the exclusive rights protected by the patent; and a trustee who has confused the profits made by the use of the trust property with those made from his own property, and commingled them so that they cannot be segregated, must account for the whole."

The court also said in that case:

> "On the other hand, such a rule would work unjustly in many cases—as where the patented feature is of an insignificant part of the machine or article; and it is probably because of its manifest inequity in such cases that the courts have placed upon the complainant the burden of proof."

In that case the evidence was conclusive that the patented invention was of great value; and, while the evidence may have fallen short of showing that the *entire* commercial value of the article was due to the patented invention, yet it appeared that it was the chief and vital part thereof.

The case of Brickill *vs.* the Mayor of New York, 112 Fed., 65, decided by the Court of Appeals of the Second Circuit, is another case directly in point. The claim was for—

> "The *combination* with a steam fire engine, of a heating apparatus, constructed substantially as described, for the purpose set forth."

There the Court of Appeals held that the infringer was not liable to the patentee for the profit he had made on the entire apparatus, but only such as had accrued from the use of that part which was new.

In Lattimore *vs.* Hardsogg Mfg. Co., 121 Fed., 986, the Court of Appeals of the Eighth Circuit said:

> "This is not a case where the entire or any considerable value of the article sold is attributable to the patented feature, and profits upon the entire article are only allowable where such article is wholly the invention of the patentee, or where its entire value is properly and legally attributable to the patented feature. Sessions *vs.* Romadka, 145 U. S., 29; 12 Sup. Ct., 799; 36 L. Ed., 609. In McCreary *vs.* Penn. Canal Co., 141 U. S., 459; 12 Sup. Ct., 40; 35 L. Ed., 817; the Supreme Court says that, '*where the device is a mere improvement upon what was known before, and was open to the defendant to use,* the plaintiff is limited to such profits as have arisen from the use of the improvement over what the defendant might have made by the use of that or other devices without such improvements. This is a familiar doctrine announced by this court in a number of cases.'"

In Cary Mfg. Co. *vs.* De Haven, 139 Fed., 262 (C. C. A., 2nd Circuit), it appeared that the defendant sold apparatus containing the patented features and also apparatus not containing the patented features and no advance in price was charged for the apparatus containing the patented features, and no user ever discovered the practical value of the patented features—the same state of facts as exist in the case at bar. The court allowed the complainant but nominal damages and held that the theory that an invention of such insignificant value was so indispensable to users that no purchaser would have been found for the apparatus unless it was provided with the patented features, was preposterous, although it might be conceded that the patented features helped to sell more or less of the apparatus, but that the proofs utterly failed to show that the apparatus would not have been marketable without the patented features.

The contentions made by the complainant's counsel in this case are so effectually disposed of by two cases by the Court of Appeals of the Second Circuit, decided by the very judges who upheld the Westinghouse patent here in

suit, that we refer to said decisions at some length and quote therefrom.

One of these cases is that of the Westinghouse Air Brake Company *vs.* The New York Air Brake Company, 140 Fed., 545. In that case it appeared that the only novel feature of the combination claims sued on, was the piston or diaphragm independent of and unconnected with the triple valve piston The brake cylinder, the chamber or casing connected therewith, the auxiliary reservoir, and the triple valve were old in the art and had been used in combination before. The claims sued on covered the piston or diaphragm independent of the triple valve and known as the auxiliary or quick-action device *in combination* with the above specified elements. The master and the lower court allowed the complainant the entire profit made on the combination of the above elements—that is, all the profit on the entire equipment. The Court of Appeals reversed the finding of the lower court and held that inasmuch as the complainant had not shown the profit made by the defendant on that part of the apparatus which the inventor of complainant's patent had incorporated in or added to the structure, the complainant was entitled only to a nominal recovery, in spite of the fact that the evidence showed that the salability of the apparatus was greatly increased by the quick-action feature, and that comparatively few outfits were sold or could be sold without the quick-action feature. The court said:

> *"When the patented improvement is one of subordinate importance, or the value of the machine as a whole depends more upon the presence of the unpatented parts, a finding that the marketable value of the whole has been created by the patented part can seldom be correct.* * * *
>
> *"As has been already suggested, the cases are exceedingly rare in which the whole marketable value of a machine, or of a collection of devices, can in reason be attributable to a patented feature which embraces merely an improvement in one of its parts."* * * *

The contention of the complainant appears to be that where an inventor adds one feature to an apparatus he is entitled to the profit made upon the entire apparatus. Thus, where a previous apparatus comprised ninety-nine parts and an inventor adds one part thereto the complainant claims that such inventor is entitled to recover 100 per cent of the profit made, even though the one feature added does not materially increase the marketable value of the apparatus.

In the other case decided by the Court of Appeals of the Second Circuit, Force *vs.* The Sawyer-Boss Mfg. Co., 143 Fed., 894, the opinion was written by Judge Townsend, who wrote the opinion in the Carbide case in the Court of Appeals on the Westinghouse patent involved in the case at bar.

The claims sued on were combination claims. The court said:

> "There is no satisfactory evidence that the machine was more salable by reason of these improvements; the testimony of defendants, referred to above, tends to show that their sales were unaffected by the presence or absence of said devices. There is no evidence that the improvements introduced any new function or result, nor any satisfactory proof that the machines were by reason thereof more convenient or practical for the user, or more commercially successful. In short, there is no evidence that the patented improvements were a dominant feature of the machine, or contributed to its sale, or created a new article, or obviated prior objections in practical operation."

The doctrine laid down in Canda Bros. *vs.* Michigan Malleable Iron Co. (C. C. A., 6th Circuit), 152 Fed., 178, applies to the facts in the case at bar. The third syllabus states succinctly what is held by the court and is as follows:

> "Where infringement of one claim only of a patent is adjudged, the infringer cannot be held to account

> for profits arising from the sale of a part of the device which was not an element of such claim, although it may have been an element of other claims."

In McSherry Mfg. Co. *vs.* Dowagiac Mfg. Co., 160 Fed., 950 (C. C. A., 6th Circuit), relied on by the complainant, the court said:

> "There was evidence tending to show both that the appellant company received said amount of profits from the sale of said drills, and that the profits arising therefrom were attributable solely to said spring-pressure device, which it contends was all that was covered by the patent."

Complainant's counsel have several times in their brief referred to the case of Brennan & Co. *vs.* Dowagiac Mfg. Co., 162 Fed., 472 (C. C. A., 6th Circuit), which they say corresponds to the facts in the case at bar. The decision is a long one and we quote from one of the syllabi in the Federal Reporter which we think clearly states the facts in that case and shows that it has no application to the case at bar. The second syllabus is as follows:

> "Where no other invention inheres in a patented combination, and it is not merely for an improvement, but for a new structure, an infringer who has deliberately copied such structure cannot avoid liability for the entire profits made thereon by adding improvements of its own, *which do not materially add to its sale value,* and by so conducting its business as to make it impossible to separate the profits due to each."

In Dowagiac Mfg. Co. *vs.* Superior Drill Co., 162 Fed., 479 (C. C. A., 6th Circuit), also relied on by the complainant, the court said:

> "There was no proof which could have justified the master in the conclusion that any other invention than that of the Packham patent was present in the drills which constituted the infringement."

In the recent case of Orr & Lockett Hardware Co. *vs.* Murray, 163 Fed., 54 (C. C. A., 7th Circuit), relied on by the complainant, there was no proof that any portion of the profits was the result of anything else than the patented apparatus. It did not appear that the infringing apparatus contained anything other than what was claimed in the claim of the patent sued on.

THE RULES LAID DOWN BY THIS COURT SUSTAIN DEFENDANT'S CONTENTION AS TO COMPLAINANT'S DUTY ON AN ACCOUNTING.

This court has in unmistakable terms in numerous cases laid down the rule of which the adjudications thus above indicated are substantial reiterations.

In the "Cawood Patent," 4 Otto, 695, this court said:

> "* * * In settling an account between a patentee and an infringer of the patent the question is: Not what profits the latter has made in his business, or from his manner of conducting it, but what advantage has he derived from his use of the patented invention."

The case of the City of Elizabeth *vs.* The Nicholson Pavement Company (97 U. S., 141) does not support complainant in its contention that it is entitled to the entire profits realized by the defendant on its transformers.

This court in that case said:

> "The Nicholson pavement was a complete thing, consisting of a certain combination of elements. The defendants used it as such, the whole of it. If they superadded the addition made to it by Brocklebank & Trainer they failed to show that such addition contributed to the profits realized."

In the Goulds Manufacturing Company *vs.* Cowing *et al.*, 105 U. S., 253, this court said:

"If, without the improvement, a machine adapted to the same uses can be made which will be valuable in the market and salable then, as was further said in Mowry *vs.* Whitney, p. 651, the inquiry is 'What was the advantage in cost, in skill required, in convenience of operation or market ability' gained by the use of the patented improvement? If the improvement is required to adapt the machine to a particular use, *and there is no other way open to the public of supplying the demand for that use,* then it is clear the infringer has by his infringement secured the advantage of a market he would not otherwise have had, and that the fruits of this advantage are the entire profits he has made in that market."

In the leading and oft-quoted case of Garretson *vs.* Clark, 111 U. S., 120, this court said:

"When a patent is for an improvement and not for an entirely new machine or contrivance the patentee must show in what particulars his improvement has added to the usefulness of the machine or contrivance. He must separate its results distinctly from those of the other parts so that the benefits derived from it may be distinctly seen and appreciated. The rule on this head is aptly stated by Mr. Justice Blatchford in the court below: 'The patentee,' he says, 'must in every case give evidence, tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative; or, he must show, by equally reliable and satisfactory evidence, that the profits and damages are to be calculated on the whole machine for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature.'

"The plaintiff complied with neither part of this rule. He produced no evidence to apportion the profits or damages between the improvement constituting the patented feature and the other features

of the mop. His evidence went only to show the cost of the whole mop and the price at which it was sold.

"*And of course it could not be pretended that the entire value of the mop head was attributable to the feature patented. So the whole case ended, the rule was not followed, and the decree is, therefore, affirmed.*"

And in the case of Black *vs.* Thorne, 111 U. S., 122, immediately following the latter case, this court said:

> "It does not always follow that because a party may have made an improvement in a machine and obtained a patent for it, another using the improvement and infringing upon the patentee's rights will be mulcted in more than nominal damages for the infringement. *If other methods in common use produce the same results, with equal facility and cost, the use of the patented invention cannot add to the gains of the infringer, or impair the just rewards of the inventor.* The inventor may indeed prohibit the use, or exact a license fee for it, and if such license fee has been generally paid, its amount may be taken as the criterion of damage to him when his rights are infringed. In the absence of such criterion the damages must necessarily be nominal."

See also in this connection Dobson *vs.* The Hartford Carpet Co., 114 U. S., 439, wherein this court approves and reiterates the doctrine laid down in Garretson *vs.* Clark, *supra.* See also Dobson *vs.* Dornan, 118 U. S., 10.

In the case of Tilghman *vs.* Proctor, 125 U. S., 148, relied upon by complainant, this court said:

> "The infringer is liable for *actual*, not for possible gains. The profits, therefore, which he must account for, are not those which he might reasonably have made, but those which he did make, by the use of the plaintiff's invention; *or, in other words, the fruits of the advantage which he derived from the use of that invention, over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally beneficial result.*

> *If there was no such advantage* in his use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by an action at law for damages."

In Hurlburt *vs.* Schillinger (130 U. S., 456), relied on by the complainant, this court said:

> "It clearly appears that the defendant's concrete flagging derived its *entire* value from the use of the plaintiff's invention, and that if it had not been laid in that way it would not have been laid at all."

In Crosby Valve Co. *vs.* The Safety Valve Co. (141 U. S., 441), relied on by complainant, this court said:

> "The master says, in his report,"
> "Eliminate this invention from the defendant's valves and they would be commercially worthless. No substitute for this invention has been suggested to me, and I know of none which the defendants could have used in its place to have made their valves of commercial value."

* * * * * * *

The court further said:

> "It appears, by reliable and satisfactory evidence, that the profits made by the defendant are to be calculated in reference to the entire valve made and sold by it, for the reason that the entire value of that valve, as a marketable article, is properly and legally attributable to the patented feature of the patent of 1866."

In McCreery *vs.* The Pennsylvania Canal Co., 141 U. S., 459, this court said:

> "There is no doubt of the general principle that, in estimating the profits the defendant has made by the use of the plaintiff's device, where such device is a mere improvement upon what was known before, and was open to the defendant to use, the plaintiff is limited to such profits as have arisen from the use

> of the improvement over what the defendant might have made by the use of that or other devices without such improvements. This is a familiar doctrine announced by this court in a number of cases."

Keep *vs.* Fuller (42 Fed., 896, Judge Cox, in the northern district of New York), relied on by the complainant, is not in point. The court in that case said:

> "Remove the patented features and nothing remains. Although it is an improvement upon stoves the complainant is not seeking to recover the profits upon the stove, but upon the improvement only."

On the same patent in Warren *vs.* Keep (155 U. S., 265) this court held that where a patent is for a particular part of an existing machine it is not sufficient to ascertain the profits on the whole machine, but it must be shown what part of the profit is due to the particular invention secured by the patent.

This court in that case said:

> "The rule requiring that the profits arising from the patented features must be separated from those arising from the unpatented features has little application in a case where every feature is patented."

THE DEFENDANT SHOWED, AFFIRMATIVELY, NO SUBSTANTIAL DIFFERENCE BETWEEN THE INFRINGING AND NON-INFRINGING TRANSFORMERS, AND THE COMPLAINANT DID NOT PROVE THE VALUE OF THE SLIGHT DIFFERENCE, THOUGH THE BURDEN OF PROOF WAS UPON COMPLAINANT.

XXV. Inasmuch as the circuit court held that the defendant had a perfect right to manufacture and sell transformers in which there were open spaces for the circulation of oil between the coils and between the coils and the core, and only ordered the Master to take and state an account

as to such transformers as had been made or sold by the defendant in which there were open spaces in the core itself, and refused to order the Master to take and state an account as to transformers made and sold by defendant in which there were open spaces between the coils and between the coils and the core and no open spaces in the core itself; and inasmuch as all the transformers of defendant's manufacture brought to the attention of the Master by the complainant, were transformers in which there were open spaces between the coils and between the coils and the core, and, also open spaces between the parts of the core itself, it follows, necessarily, that it was the duty of the Master to consider any evidence that might be offered tending to show any difference between the value of the defendant's transformers that had core-spaces and the value of the defendant's transformers that had no core-spaces, as, by so doing, he would be enabled, upon the ascertainment of such difference, to find the actual value properly attributable and chargeable to the improvement covered by claim 4.

XXVI. That almost all of the value of defendant's transformers was attributable to that which was open and free to the defendant to use, was thoroughly well proven *by the defendant* before the Master, and no effort was made on the part of the complainant to show the value of the slight difference, though, as to this, the burden of proof was upon complainant.

Garretson *vs.* Clark, 111 U. S., 120.

Keystone Mfg. Co. *vs.* Adams, 151 U. S., 145.

(See discussion of these cases by Court of Appeals, Sixth Circuit, in Canda Bros. *vs.* Michigan, etc., 81 C. C. A., 420-423).

DEFENDANT'S PROOFS AS TO VALUE OF THINGS IN ITS TRANSFORMERS OPEN AND FREE TO ITS USE.

Mr. Layman, for defendant, testified that the separation or subdivision of the coils in the defendant company's transformers was important and practically indispensable and that the defendant company would be at a very decided disadvantage if it was making and selling transformers which did not contain spaces between the coils and between the coils and the core, but which did have open spaces in the core (p. 492). He further testified (p. 492) that since discontinuing the open spaces in the core of their oil-filled transformers the defendant had not lost, on that account, a single sale, nor had there been complaint from a single purchaser.

Mr. Schwedtman, who was formerly superintendent of the defendant company, testified (p. 526) that the space between the coils and the core was recognized as an advantage and that every effort was made to keep that space as large as possible in the Wagner design. Professor Nipher, of Washington University (pp. 405-6 and p. 413), and Professor Gray, of the Rose Polytechnic Institute of Indiana (pp. 427-8), testified that the use of open spaces in the core of an oil-cooled transformer does not contribute materially to the success of the transformer, particularly when the open spaces in the core are arranged horizontally, as in defendant's transformers.

Professor Nipher, at the pages above cited, says:

> "I do not regard the existence of open spaces in the core as being at all indispensable or at all necessary. Transformers operating successfully have been made, which did not have such open spaces in the core, and they are still made without such spaces. There is a distinct advantage in having the iron core warm, so long as the copper coils are cool. This diminishes the iron loss and the cooling of the copper coils diminishes the copper loss."

* * * * * * *

"It has always been possible to design transformers without spaces in the iron core, which will not age, because they will not overheat when made of proper design. For this reason I am decidedly of the opinion that such spaces in the iron core of a transformer are not of any essential importance. They may be used, and a transformer may be designed with reference to their use; but a transformer may also be designed with reference to their non-use, and such transformer will be as successful as the other; and this was so at the time of the filing of the patent in suit."

Professor Gray, on the pages indicated (427-8), points out that in complainant's transformer of the patent in suit the open spaces in the core are vertically arranged and that there will be an active circulation through such vertical spaces; whereas, in defendant's transformers, the oil spaces in the core are horizontal, and there will be no active circulation through such spaces; but, on the other hand, the oil in such spaces will be relatively stagnant. Professor Gray also points out that, by reason of the vertical spaces in the core of complainant's transformers, shown in the patent in suit, the circulation of oil through such open spaces in the core will not only be active, but will come in contact with the coils, and thus tend to keep the coils cool.

Mr. Layman points out that in such of defendant's transformers as are included in the accounting plates of insulation are used between the coils and cores, so that any oil which may tend to enter the spaces or pockets in the core would not touch the coils (pp. 495-6). At pages 427-8, Mr. Layman also points out that in complainant's model the coils are against the iron core, and that the circulation of oil in the vertical spaces in the core will have some effect in taking the heat out of the copper coil.

But, better than all the foregoing, which is merely the opinion of persons skilled in the art, is the testimony of Mr. George E. Wells, a competent electrical engineer, who, after the decision in the Carbide case, went to Niagara Falls and

removed the open spaces in the core of the transformers made by this defendant for the Carbide Company, and made actual tests upon those transformers, both before removing such spaces and after removing them.

Those Carbide transformers were of enormous size, as will be seen by referring to the illustration in the transcript (p. 108), being from ten to twelve feet high. In such transformers a more complete sub-division of the transformer is necessary and a more thorough circulation of oil demanded than in transformers of ordinary size, because, proportionally, more heat is generated therein than in smaller transformers.

Mr. Wells' testimony in full will be found in the transcript (pp. 442-8). He testifies in answer to Q. 184 (p. 446), with reference to these Carbide transformers, as follows:

> "Q. 184. Will you please state what you did, and what was the result of your tests on these transformers?
>
> "A. In June, 1902, I went to Niagara Falls and connected up these transformers so as to make a complete temperature test on one of the transformers, both with the spaces in the iron core, and a similar test after the spaces were removed from the iron core. The result of this test shows that there was no appreciable difference in the rise in temperature of the transformer when same were operating with the spaces in the core and without spaces in the core.
>
> "Q. 185. What do you mean by 'appreciable difference in the rise of temperature?
>
> "A. In this case we call one degree Centigrade an appreciable rise."

In answer to Q. 190 (p. 447) Mr. Wells said the Carbide transformers which he tested had open spaces between the coils and between the coils and the core.

Professor Langsdorf, of Washington University, professor of electrical engineering at that university, made tests on two transformers, one having open spaces in the core for the

circulation of oil, and having also open spaces between the coils and between the coils and the core for the circulation of oil (Q. 201, p. 451), and another transformer without open spaces in the core, but having only open spaces between the coils and between the coils and the core for the circulation of oil. The transformers which Professor Langsdorf tested were comparatively small transformers, such as are ordinarily kept in stock by manufacturers to fill current orders, and are what might be termed regular commercial transformers. His testimony in full will be found in the transcript (pp. 448-457). He says:

> "The one without spaces was one and one-tenth degree centigrade hotter than the one with spaces; * * * that is, two degrees Fahrenheit" (Q. 195-6).

He testifies furthermore (Q. 202) that it would require an increase of more than 30° to produce an appreciable increase in the aging effect of the iron in the transformers and gives his authority for that statement. Complainant has not shown that the proven small difference in temperature would cause any aging of the iron or injuriously affect the transformer in any way. Defendant's testimony, on the contrary, shows that a difference of 2 degrees would not produce any substantial effect on the apparatus in any way (Nipher, p. 422; Gray, p. 436, Q. 157).

The evidence also shows that after the Court of Appeals in the Carbide case sustained the Westinghouse patent in suit, and an injunction was issued in pursuance of the decree, the defendant, The Wagner Company, not only changed the Carbide transformers by removing the open spaces in the core for the circulation of the oil, and discontinued making transformers having open spaces in the core for the circulation of the oil; but that, although the Westinghouse patent in suit expired July 12, 1904, the defendant has not since then incorporated in its transformers the feature of having open spaces in the core for the circulation of the oil.

In corroboration of what the defendant's witnesses stated as to the alleged advantage of using open spaces in the core of a converter, to cool the same, defendant introduced before the master (p. 424) two patents on transformers, one, (No. 516,850, dated March 20, 1894) granted to Elihu Thomson, of Boston, Massachusetts, an eminent authority on the subject of electrical engineering, of international repute, and one of the persons after whom the Thomson-Houston Electrical Company was named, which was the foundation company of the General Electric Company, and the other patent, (No. 539,876, dated May 28, 1895), granted to Walter H. Moody, of the General Electric Company, who was a witness for the complainant in the Carbide case. These patents were introduced as containing the views of eminent authorities on the subject.

Thomson in his patent says that he allows the iron to run as hot as may be under the conditions of service. Mr. Moody, the patentee of the other patent, is perhaps the best versed man in the United States, if not in the world, on the designing of transformers, and has charge of the designing of transformers for the General Electric Company. In his patent he says:

> "In fact, a high temperature of the iron is advantageous provided that at the same time the copper coils are kept cool."

Professor Nipher (p. 410) says the statements in these patents are true and that he agrees with the authors of the same.

We find that, for some unexplained reason, copies of these Thomson and Moody patents have been omitted from the transcript. They were duly offered (p. 424), and were probably left out inadvertently by the complainant in the making of the transcript.

COMPLAINANT OFFERED NO EVIDENCE TO REBUT OR CONTRADICT DEFENDANT'S EVIDENCE AS TO THE VALUE OF THINGS DEFENDANT WAS FREE TO USE.

XXVII. Complainant made no attempt to contradict or to meet in any way this testimony introduced before the master on the question of the value of the difference between defendant's transformers without core spaces and defendant's transformers with core spaces, so defendant's testimony is to be accorded full weight.

FROM NO POINT OF VIEW IS DEFENDANT ESTOPPED TO SHOW THE **DEGREE** OF UTILITY OF THE IMPROVEMENT COVERED BY CLAIM 4.

XXVIII. Complainant's contention has been and still is that in view of the fact that the court had held the patent in suit to be valid, and as therefore covering an invention that was useful, defendant could not in the accounting attack the utility of the invention. Even if it were true that defendant was estopped by the decree from asserting before the master the *entire* inutility of the improvement covered by claim 4 of the patent, it was certainly not barred from showing the extent or degree of utility of the improvement as throwing light on the value of the improvement.

Gibbs *vs.* Hoefner, 19 Fed., 323.

Lamb Knit Goods Co. *vs.* Lamb Glove & M. Co. (C. C. A.), 120 Fed., 272.

International Tooth Crown Co. *vs.* Hanks, etc. (C. C. A.), 111 Fed., 920.

Lee *vs.* Pillsbury, 49 Fed., 750.

CAN COMPLAINANT URGE RES ADJUDICATA IN THIS COURT?

XXIX. Moreover, however firmly bound the defendant may have been in the courts below by the decree in this case, or by the decree in the Carbide case, can it be held to be concluded in this court? The admission in defendant's answer in this case that "the matters and things found and decreed" in the Carbide case are *res adjudicata* has no more weight than would a copy of the decree in the Carbide case offered by complainant. It is a mere substitute for evidence and the equivalent of it. Defendant is in this court by virtue of the action of the complainant. It had no power to bring, as a matter of right, the Carbide case into this court, and it had no power, as matter of right, nor any disposition, to bring this case into this court.

Complainant, by its own act, is in this court asserting the validity of its patent, asserting the defendant's infringement of it, and the defendant's liability for such infringement. It cannot expect this court to shut its eyes to any infirmity in its title to the patent, or to its right to relief under it, that may appear from the record it has brought up.

Are not the judgments of this court too important to be founded upon any error or mistake that may have been committed by an inferior court in the Federal system?

This court has already decided in suits involving patents that it will render no decree on a collateral or incidental matter that necessarily involves a false finding as to a principal or basic matter.

Hill *vs.* Wooster, 132 U. S., 693.
Kennedy *vs.* Hazelton, 128 U. S., 667.

This suggestion of this court's power does not necessarily require an exercise of the same, nor a decision as to its existence, as a determination of this case favorable to the defendant may be made without it.

We may say, however, in concluding this branch of the argument, that if the defendant in this case, or the actual defendant of record in the Carbide case, had had power to bring that case, as a matter of right, into this court, and had not done so, the doctrine of *res adjudicata* might, perhaps, now apply.

THE PRIOR ART SHOWN BY THE RECORD MAY BE EXAMINED AS AN AID IN THE INTERPRETATION OF CLAIM 4.

XXX. Even if the question of the validity of the fourth claim of the patent in suit is not open to question in this court, it is certainly competent, on this record, to show the prior state of the art as an aid to the proper interpretation of the claim; and particularly as throwing light on the question as to what was open and free to the defendant to use, and, therefore, upon the question of the value of the improvement covered by said fourth claim.

Vance *vs.* Campbell, 66 U. S., 427.
Brown *vs.* Piper, 91 U. S., 37.
Dunbar *vs.* Meyers, 94 U. S., 187.
Eachus *vs.* Broomall, 115 U. S., 429.

THE PRIOR ART.

XXXI. The prior state of the art shows that the transformer disclosed in defendant's catalogue (p. 144) is old and cannot, therefore, for this reason also, be held to be covered by the patent here in suit. We shall discuss the patents of the prior art briefly in the order in which they are arranged in the transcript.

Brooks Patent.

The Brooks patent (p. 174), granted in 1878, long prior to the patent in suit, is the first instance of an *induction coil* being submerged in oil contained in a casing; paraffine oil is the oil used, which is the very oil the complainant and every one uses today.

The patent in suit, referring to the invention, says:

> "Such apparatus are usually termed *induction coils* or converters."

Brooks did not have open spaces in the core of his converter.

Hindley & Buffham Patent.

The patent to Hindley & Buffham (p. 178), which is the next, shows (Fig. 2) in an electric dynamo machine, circular iron core plates *g*, having open spaces *f* between them with coils *e* wound upon the core. The spaces *f* are left between the plates of the core for the purpose of ventilation and for the purpose of keeping the apparatus cool. The specification says (p. 1, line 13) the improvements consist * * * *"in a novel manner of arranging the wires, whereby openings or spaces are provided for the free circulation of air."*

Fisher Patent.

The Fisher patent (p. 184) which is next, shows (Fig. 2) a soft iron core made of rings D with spaces H between the core plates, for the purpose of ventilating and keeping the armature cool. It is understood, of course, that coils are to be wound upon the core plates, as in every dynamo.

Millar Patent.

The Millar patent (p. 188), which is next, shows a magneto electric machine having iron cores E, with coils wound thereon, the whole being contained in an enclosed casing, in which oil or water is contained (see page 2, lines 44-65). The purpose of using oil, which is paraffine oil, the kind specified by the complainant in the patent here in suit, is in order to prevent heating of the apparatus. This is particularly stated in the specification at the place designated.

Professor Nipher says, at page 34 of the transcript, in referring to the Millar patent:

> "There are, however, no open spaces in the core of either the primary or the secondary coils. This device does, however, show a combination of an electric converter, an enclosing case and a non-conducting fluid or gas in said case adapted to circulate about the converter."

The Millar patent has also open spaces between the coils through which oil circulates (see Figs. 3 and 6). This Millar patent and defendant's construction now complained of as an infringement have everything in them that claim 4 of the patent here in suit has, except open spaces in the core. The same thing may be said with reference to the prior Brooks patent (Tr., p. 174) except that it does not have coil separation.

The Court of Appeals for the Second Circuit, in referring to this Millar patent, in its decision in the Carbide case, said (117 Fed., 497):

> "The use of oil or other non-conducting fluid to reduce the conductivity of the wire *coils* of a dynamo when driven at a high speed, and thus reduce the heat, is described in the Millar patent, No. 250,457, of 1883."

Waterhouse Patent.

The Waterhouse patent for electrical induction machine (p. 194) is next. In it there are primary and secondary coils, C and D, with open spaces between them, and a core, B, of iron on which the coils are wound. The plates of the core are separated from one another by an air space. In this patent granted to Waterhouse we have everything claimed in the patent in suit except the *enclosing casing* and the *oil*. This patent relates to *induction coils or converters*—identically the same sort of apparatus as the patent here in suit.

Westinghouse Patent 342,553.

The prior Westinghouse patent 342,553 (p. 208) for induction coil has open spaces between core plates (Fig. 1) and primary and secondary coils. It has everything of claim 4 of the patent in suit except the *inclosing casing containing a non-conducting fluid* or gas.

Stanley Patent 349,617.

The Stanley patent No. 349,617 (p. 216) shows an induction coil having a primary coil A and a secondary coil B, around which are placed disks *c*. This prior patent to Stanley, as appears on its face, is owned by Geo. Westinghouse, Jr., the patentee of the patent here sued on.

Stanley Patent 349,616.

In the Stanley patent 349,616 (p. 220) we have still another induction coil, composed of soft iron plates, a', a^2, a^3, separated by washers *c*, leaving an air space between the soft iron plates and the primary and secondary coils f' f^2 wound about the soft iron plates. All this patent lacks is

the tank of oil. This patent, as appears on its face, is also owned by Geo. Westinghouse, Jr., the patentee of the patent here in suit.

Zipernowski, Deri & Blathy Patent.

The patent to Zipernowski, Deri & Blathy (p. 224) shows, in Figs. 6 and 7, primary and secondary coils 2 and 3 around which are placed soft iron core disks 11 leaving open spaces between the cores. All this patent lacks is the tank of oil.

Thomson Patent.

The Thomson patent (p. 230) was more particularly directed to claim 1 of the patent here sued on, which was withdrawn in the Union Carbide case and hence needs no discussion here.

Stanley Patent 349,612.

The Stanley patent 349,612 (p. 242) is the one which the Court of Appeals for the Second Circuit refers to in its decision in the Carbide case. The Court of Appeals, referring to this Stanley patent, says (117 Fed., 497):

> "Although the drawings do not show open spaces in the core, and defendant's expert assumes that there are no such spaces, yet it appears from the foregoing description that the patentee conceived the idea of a separation of the plates either so as to admit air or to provide for the insertion of some fabric for purposes of insulation. The description and drawings of the Stanley patent show a base plate and perforated cover adapted to ventilate the converter and to protect it from physical injury. *We have then, in the prior art every element of the combination claimed, and the physical combination of the same elements,* except that the separations in Stanley are not adapted to, and the construction of the enclosing case is prohibitive of, the purposes of the claim in suit. This

claim covers such an enclosing case as will confine the non-conducting fluid, and *such open spaces in the core* as will permit the circulation of the liquid *through them.*"

This patent, as appears on its face, is owned by Geo. Westinghouse, Jr., the patentee of the patent here in suit.

Stanley Patent 428,574.

The Stanley patent 428,574 (p. 246) shows parallel primary and secondary coils P and S and a soft iron core A, composed of plates, there being open spaces between the plates of the core. In Fig. 1 of this patent a clear open space is shown between the primary and secondary coils. All this patent lacks is the tank of oil. This prior patent, as appears on its face, is owned by Geo. Westinghouse, Jr., the patentee of the patent here in suit.

Thomson Patent 265,936.

The Thomson patent No. 265,936 (p. 250) shows the commutator K of a dynamo-electric machine, which is immersed in an enclosing casing containing oil. Professor Nipher, defendant's expert, says, at the top of page 37, the effect of this oil will be to keep down the temperature of the apparatus.

Schmid Patent.

The patent to Schmid, No. 366,347, is next (p. 259). The construction of the electrical converter shown in this patent is specifically disclaimed in the patent here in suit. The patentee of the patent in suit practically admits that all he did, so far as claim 4 is concerned, was to immerse this transformer in a tank of oil. This patent, as appears on its face, is owned by Geo. Westinghouse, Jr., the patentee of the patent here in suit.

We have previously shown that in the Thomson patent No. 360,122 Fig. 3 (p. 230) and Fig. 17 (p. 230) are disclosed open spaces between the primary and secondary coils of a transformer having a soft iron core claimed in claim 1 of the patent here in suit. See also, in this connection, Stanley patent, Fig. 1 (p. 246). The Millar patent has open spaces between the coils for the circulation of oil in an enclosing casing.

We have furthermore shown that the drawings of the patent in suit show absolutely no spaces between the coils and the core and no such spaces are described in the specification of the patent in suit.

So that the only thing the patentee of claim 4 did was to provide open spaces *in the core* of a transformer and put that transformer in a closed tank of oil—and this is what the Court of Appeals for the Second Circuit sustained as the patentee's invention in the Carbide case.

To save claim 4 from anticipation the Court of Appeals for the Second Circuit, in the Carbide case, read the words, "or gas" out of the claim and rejected the idea of ventilation (117 Fed., 495, bottom p. 497), so prominently emphasized in the specification.

COMPLAINANT IS NOT ENTITLED ON AN ACCOUNTING UNDER CLAIM 4 TO ALL THE PROFITS MADE BY DEFENDANT ON THE TRANSFORMERS HELD TO BE INFRINGEMENTS BECAUSE SUCH TRANSFORMERS INVOLVED OTHER CLAIMS OF THE PATENT.

XXXII. The complainant, in its bill of complaint, in this case declared upon the whole patent, which contains five claims (p. 6), but, for some unexplained reason, stated on the record at the close of its *prima facie* case (p. 21):

> "Complainant's counsel states that relief is asked as to claim 4 only of the patent in suit."

Now, one of the claims of the patent that was not pressed was claim 1, which reads as follows:

> "1. The combination, substantially as described, of a soft iron core, and parallel primary and secondary coils having an open space intervening between them."

Defendant's transformers found and held to be infringements of the fourth claim of the patent infringe this first claim also. In point of fact the evidence offered by the defendant before the master shows that while the open space between the primary and secondary coils of its transformers is of great value since it permits of the cooling of the copper parts of the apparatus that conduct the electric current, the open spaces in the core of such transformers is of little and of almost negligible value.

There are many authorities sustaining the proposition that where the complainant owns two patents, or, what is the same thing, owns a single patent having several claims, covering different features of the defendant's device, and presses for an accounting under the claim of but one patent, or under but one claim of several of his single patent, it becomes the complainant's duty to show the value of the invention covered by the particular claim asserted as distinct from the value due to the features covered by the other claims not pressed. This the complainant has failed to do in this case.

In Wooster *vs.* Simonson, 16 Fed., 680, Judge Wallace said:

> "The master has reported as damages the sum complainant has been accustomed to charge as a license fee for the use of his invention, while the proofs show that only one claim, the second, of the six claims of the patent has been infringed by defendant.
>
> "Although several of the six claims may be for substantially the same invention, others are for different combinations. It must be held that the established license fee for the use of the entire invention

> secured by the six claims of the patent is not the correct measure of damages where the defendant has not infringed all the claims. The proofs show what damages the complainant would have sustained if the defendant instead of appropriating a part of the invention, had appropriated the whole of it."

In Williams *vs.* McNeely, 77 Fed., 894, the court held that where the complainant sues on a part only of the claims of a patent, and relies on an established license fee as the measure of damages, he can recover only a nominal sum, where the evidence does not apportion the amount of such license fee between the claims which are and those which are not in litigation.

The case of Kansas City Hay Press Co. *vs.* Devol, 127 Fed., 363, before the Circuit Court for the Western District of Missouri, has many points of similarity to the case at bar. Suit was originally brought by the complainant upon six distinct patents; but the complainant recovered on only one patent; notwithstanding this, the complainant claimed that it was entitled to the entire profit which defendant had made on its machines. The court in that case found that the complainant had not shown what part of defendant's profit was due to the patented invention as segregated from the other features which the defendant had a right to use and which were covered by the five other patents, as to which the bill was dismissed. The court reviews the authorities and sustains the master in awarding complainant a nominal recovery only.

In Baker *vs.* The Crane Company, before the Circuit Court of Appeals of the Seventh Circuit, 138 Fed., 60, the court said:

> "What additional profit did complainant make by reason of the improvements? *How much of the additional profit was due to the improvement covered by claim 1; how much to claim 2, which was not infringed? In short, what was the commercial value of claim 1 to complainant? Or to any one? There is no evidence.*"

A nominal recovery only was allowed.

In the case of Westinghouse Air Brake Co. *vs.* New York Air Brake Co., 140 Fed., 551, the Court of Appeals of the Second Circuit said:

> "It now appears that its (defendant's) apparatus did infringe one of the outstanding patents. It may turn out that it infringes some of the others, *as the complainants claimed when they sued the defendant for infringing their earlier patent.* It does not seem equitable that, because the defendant appropriated certain parts in that apparatus which belonged to the complainants, it should be charged with appropriating the whole marketable value of the apparatus.
>
> "The theory that it did appropriate the whole value is inconsistent and quite irreconcilable with the original theory of the action and the claim of the complainants that they were entitled to profits and damages because the defendant had appropriated certain other parts that belonged to them."

In Robertson *vs.* Blake, 94 U. S., 728, the Supreme Court said:

> "But inventions covered by other patents were embraced in those machines. It was not shown how much of the profit was due to those other patents, nor how much of it was manufacturer's profit. The complainant was, therefore, entitled only to nominal damages. This the court gave him. It was all the state of the evidence warranted. It would have been error to give more."

In Keystone Mfg. Co. *vs.* Adams, 151 U. S., 139, the Supreme Court said:

> "Such a measure of damages is of comparatively easy application where the entire machine used or sold is the result of the plaintiff's invention; but when, as in the present case, the patented invention is but one feature in a machine embracing other devices that contribute to the profits made by the defendant, serious difficulties arise.

"It is unnecessary, in this opinion, to review the numerous cases, some at law, others in equity, wherein this court has considered various aspects of this question. It is sufficient to say that the conclusions reached may be briefly stated as follows: It is competent for a complainant who has established the validity of his patent and proved an infringement, to demand, in equity, an account of the profits *actually* realized by defendant *from his use of the patented device;* that the burden of proof is on the plaintiff; that *where the infringed device was a portion only of defendant's machine which embraced inventions covered by patents other than that for the infringement of which the suit was brought, in the absence of proofs to show how much of that profit was due to such other patents, and how much was a manufacturer's profit,* the complainant is entitled to nominal damages only" (citing cases).

The last two Supreme Court cases of Robertson *vs.* Blake and Keystone Co. *vs.* Adams hold that a defendant should be allowed a manufacturer's profit on the infringing apparatus; but the complainant in the case at bar claims all the profit made on the infringing transformers, including a manufacturer's profit.

If every claim of the patent in suit had been sustained against this defendant, the amount of recovery could not be more than the entire profit realized by the defendant on its infringing transformers, and certainly since but one claim of the patent has been sustained against this defendant, and that limited to a specific combination, which was only a part of the features used by the defendant, the complainant is not entitled to the whole profit realized by the defendant.

EVEN THE NET PROFIT ON DEFENDANT'S ENTIRE TRANSFORMERS HAS NOT BEEN SHOWN.

XXXIII. We hardly think a detailed discussion of the way in which the master undertook to find the whole net profit made by the defendant on the transformers, held by the court below to be an infringement of claim 4 of the patent, is here required, since it appears perfectly clear that the complainant, under no circumstances, is entitled to recover the entire profit made by defendant on its transformers because of the mere presence of the improvement covered by claim 4, which is demonstrated by the evidence to be of little value.

On the assumption, however, that the complainant was entitled to the entire profit made by defendant, complainant offered evidence on that point. It was clearly developed that during the period covered by the accounting the defendant kept no records by which the cost of production of the transformers could be ascertained. The defendant did have a plan of *estimating in advance of the manufacture* the cost of materials and the cost of labor that would probably enter into the cost of production, but the system was found to be untrustworthy and useless and was abandoned and none of the data relating to it preserved. The defendant has a better system, now, whereby the cost of production can be ascertained with some accuracy; it involves the keeping of a record in respect of every transformer made. The material that enters into the construction of every transformer is now charged to that particular transformer when it leaves the stock-room, and the actual cost of the labor involved in the construction of that particular transformer is also kept. If that particular transformer has to be reconstructed, as by rewinding its coils or by changing it in any respect, the value of that labor is kept (Layman, pp. 510-11,

Q.'s 270-279). Such is the system now; but there was no such system during the period covered by the accounting.

What the master did in reaching a conclusion was to use as his basis the evidence furnished by the defendant as to the total volume of its business during the period covered by the accounting, the proportion of this business due to the manufacture and sale of transformers, and the total profits on the whole business. From this, and equally general data, and without tangible and reliable evidence as to actual cost of production, he guessed at what the profit on the transformers might have been, and made an award accordingly.

Such guesswork as this does not satisfy the requirement of the law, which demands reliable and tangible evidence, certainty and not conjecture, facts and not guesses, as to the amount of profits made.

The Charge of Suppression of Evidence by Defendant Refuted.

XXXIV. A rather veiled charge of suppression of evidence on the part of the defendant before the master has been made by the petitioner, which we think may be effectually disposed of by a short statement:

Mr. Layman, the general manager of the Wagner Company, when called by the complainant as a witness before the master, was asked to make a report, from the books of the company, showing separately the cost of material and the cost of labor entering into each of the transformers included in the accounting, and, separately, every element of cost which entered into the cost of production thereof, and he replied (p. 335):

> "A. I have not been able to prepare such report, because the books of the company do not give the information asked for. As stated at a previous examination, I have been unable to find any cost records extending over the period of this examination from

> which such report as requested can be made up. The best I am able to submit is a statement of total sales of all kinds of apparatus and total profits for the corresponding period."

And in answers to Qs. 132, 133 (p. 335) he said he was unable to give the data from which could be ascertained the cost of manufacture or the profits made on transformers. After Mr. Layman had thus testified, two former employés of the Wagner Company, Johanneson and Foster, were called to testify to a former custom of the Wagner Company as to the making of *estimates* of cost of material and labor entering into transformers, before the manufacture of the same, and as to the making of stock inventories based upon such estimates.

Mr. Layman, when called in rebuttal of these witnesses, showed that the figures given by them were mere *estimates*, which by no means represented actual costs, and were so unreliable that the system involving them had long since been abandoned by his company (p. 458-462, Q. 210 *et seq.*). No better idea can be gained of the difference between the views of Mr. Johanneson and of Mr. Layman as to the value of the cost estimates about which the former testified than by quoting Mr. Layman's answer to Q. 66 (p. 480):

> "A. In his answer to Q. 29 Mr. Johanneson again assumes that such estimates of cost as he has submitted in Complainant's Exhibits Blue Prints A and B are the actual costs of the apparatus, and the difference between him and me is entirely in the fact that I call them estimates, and he calls them costs. I say they were not accurate estimates and he says they are absolute costs. I refer to the matter of inventories: Mr. Johanneson is assuming that the figures carried into the inventories were absolute costs of the transformers; while as a matter of fact, such figures were authorized figures at which to price the apparatus for inventory purposes, but were not cost prices," etc., etc.

Mr. Layman was then put this question by counsel for defendant (p. 482):

> "Q. 232. Are those inventories available at the present time, covering the period of these schedules of transformers?
> "A. I think they are, or at least they ought to be in the vaults of the company."

Mr. Layman was cross-examined by complainant's counsel, but was not asked to produce the inventories or to look for them. Nor did the master ask that they be produced.

The burden of proof was on the complainant and if complainant's counsel had wished the inventories he could have had them on call or could have compelled their production by a *subpœna duces tecum*, if necessary.

This is the suppression of evidence about which so much has been said.

XXXV. The reasoning and conclusions of the Court of Appeals in rejecting the findings of the master and affirming the decree of the court below form, perhaps, a fitting conclusion to this brief.

The Court of Appeals said (p. 588):

> "We are unable to concur in the master's findings. We think claim 4 is a limited detailed claim—open spaces in the core being one of its chief or distinguishing features. This was the view entertained by Judge Amidon upon an application for a temporary injunction, and by Judge Adams at the hearing upon which the case was referred to the master. 129 Fed., 604. See also Westinghouse Electric & Mfg. Co. *vs.* Union Carbide Co., 117 Fed., 495; Westinghouse Electric & Mfg. Co. *vs.* American Transformer Co., 121 Fed., 560; 130 Fed., 550.
> "The evidence clearly shows, we think, that the thing principally to be desired in the construction of a transformer is to keep the coils rather than the core from becoming overheated. The appellant's patent, claim 4, seems to have proceeded upon the idea that

the thing principally to be accomplished was to keep the core from becoming overheated, and to that end it provided that one element of the combination covered by claim 4 was to be the open spaces in the core, nothing whatever being said in that claim about open spaces between the coils or about open spaces between the core and the coils. Bearing in mind that the thing desired is to prevent the overheating of the coils, it will be seen that appellant's combination, claim 4, operates to that end only in so far as the core if becoming overheated would have a tendency to heat the coils. The appellee in our view improved upon appellant's device by providing, in addition to spaces in the core, for spaces between the coils, and spaces between the core and the coils, through which the oil or other cooling medium could circulate and thereby much more certainly and efficiently accomplish the purpose desired, viz: keeping the coils at a proper state of temperature. This, we think, was a material and substantial improvement on appellant's combination, claim 4. It must, of course, be conceded that while appellant's combination, claim 4, although really designed to keep the core from becoming overheated, also tended to keep the coils from becoming overheated, but the appellee's transformer much more efficiently accomplished the result desired by providing for a circulation of oil or other cooling medium through the open spaces between the coils and between the core and the coils, as well as through the open spaces in the core. We conclude, therefore, that the master was in error in finding that the entire commercial value of the infringing transformers manufactured and sold by the appellee during the time concerned in the accounting was due to the combination described in claim 4 of appellant's patent.

"And to the extent that the appellee has improved upon that which was covered by appellant's patent, claim 4, the appellant cannot demand the appellee's profits, because the only right of the appellant to complain of the appellee is in the use by the appellee of the patented combination, claim 4, and the only right which the appellant has to the profits realized by the

appellee is confined to such profits as resulted solely from the use of appellant's combination, claim 4, the profits resulting from the improvement made by the appellee being something in which the appellant has no interest. The evidence shows, we think, that the open spaces between the coils and between the core and the coils performed a very substantial office and that if added to spaces in the core would, as already suggested, necessarily accomplish the desired result more certainly and more efficiently.

"The patented device covered by claim 4, being, as we view it, a limited detailed claim and not being generally for a circulatory system throughout the heat-producing parts of the transformer, and the appellee's infringing transformer embracing something of value not covered by that claim, viz: open spaces between the coils and between the coils and the core, we are of opinion, that the appellant, whose patent covered only part of the infringing device, is not entitled to recover all the profits made by the appellee but only such as resulted from the patented invention. Stirrat *vs.* Excelsior Mfg. Co., 61 Fed., 980; Baker *vs.* Crain, 130 Fed., 60; Robertson *vs.* Blake, 94 U. S., 228; Garretson *vs.* Clark, 111 U. S., 120.

"The master's report shows that the appellant offered no evidence upon the question of damages but relied entirely upon the position that the amount which it was entitled to recover could be based upon the profits realized by the appellee from the sale of the infringing device.

"The master found that the appellee kept no separate account of its profits realized from its infringing device, but on the contrary, that the profits made by appellee on the infringing transformers were merged with the profits of its entire business, so that it was impossible to separate them and that the appellee did not know and could not furnish the cost of the manufacture of the infringing transformers or even an estimate thereof. We do not think that the mere failure to keep separate the profits derived from the infringing device under the circumstances disclosed by the record, warrants the application of the equity rule, that where one wrongfully mingles his goods with those of another so that they are in-

distinguishable from the mass, the party injured is entitled to take the whole. This rule has been applied in cases of the invasion of a copyright where the wrongdoer has mingled in the book, matter to which a copyright does not properly extend with matter covered by the copyright 'the two necessarily going together, when the volume is sold as a unit, and it being impossible to separate the profits on the one from the profits on the other and the lawful matter being useless without the unlawful.' Callaghan *vs.* Myers, 128 U. S., 617.

"There is no evidence tending to show that the appellant's failure to show how much of the appellee's profit resulted from the infringed combination and how much from the presence of the other elements of the infringing transformer, was due to any refractory or deceitful conduct on the part of the appellee, such as destruction or hiding of the books, or refusal to produce them for the use of the appellant. The mere failure on the part of the appellee to keep an account separating the profits prior to the sustaining of appellant's patent and at a time when, as the record shows, appellee believed in good faith that it was not invading any right of the appellant, is not conduct which would render the appellee liable as a confusor of goods within the rule just stated, nor such conduct as would relieve appellant from the necessity of carrying the prescribed burden of proof. Seymour *et al. vs.* McCormick, 57 U. S., 479.

"In Keystone Mfg. Co. *vs.* Adams, 151 U. S., 139, the Supreme Court, discussing a similar question, said: 'While it is undoubtedly established law that complainants in patent cases may give evidence tending to show the profits realized by defendants from use of the patented devices and thus enable the courts to assess the amounts which the complainants are entitled to recover, yet it is also true that great difficulty has always been found, in the adjudicated cases, in applying the rule that the profits of the defendant afford a standard whereby to estimate the amount which the plaintiff is entitled to recover, and in defining the extent and limitations to which this rule is admittedly subject.

"Such a measure of damages is of comparatively easy application where the entire machine used or sold is the result of the plaintiff's invention: but when, as in the present case, the patented invention is but one feature in a machine embracing other devices that contribute to the profits made by the defendant, serious difficulties arise.

"It is unnecessary, in this opinion, to review the numerous cases, some at law, others in equity, wherein this court has considered various aspects of this question. It is sufficient to say that the conclusions reached may be briefly stated as follows: 'It is competent for a complainant, who has established the validity of his patent and proved an infringement, to demand, in equity, an account of the profits actually realized by defendant from his use of the patented device; that the burden of proof is on the plaintiff, that where the infringed device was a portion only of defendant's machine which embraced inventions covered by patents other than that for the infringement of which suit was brought, in the absence of proof to show how much of that profit was due to such other patents, and how much was the manufacturer's profit, the complainant is entitled to nominal damages only.' Citing Seymour *vs.* McCormick, 16 How., 480; Rubber Co. *vs.* Goodyear, 9 Wall., 788; Maury *vs.* Whitney, 14 Wall., 620; Elizabeth *vs.* Pavement Co., 97 U. S., 126.

"In Garretson *vs.* Clark, 111 U. S., 120, the Supreme Court quoted with approval a statement of the rule announced by the circuit court, as follows: 'The patentee must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative.' And upon this question the burden of proof is upon the complainant. If he fails to carry this burden he is entitled only to nominal damages.

"In Tilghman *vs.* Proctor, 125 U. S., 136, the court, in the course of its opinion, said: 'The infringer is liable for actual, not for possible, gains. The profits, therefore, which he must account for are not those which he might reasonably have made,

but those which he did make by the use of the plaintiff's invention, or, in other words, the fruits of the advantage which he derived from the use of that invention, over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally beneficial result. If there was no such advantage in his use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by an action at law for damages.'

"Here the appellant failed to prove by reliable or tangible evidence, that the entire value of the infringing transformer as a marketable article, was properly and legally attributable to appellant's patented combination embodied therein, and so, in the light of the decisions above cited, and many others, which we have examined, announcing the same rule, we think that the appellant is entitled to recover nominal damages only; in other words, that as a part only of the profits made by the appellee are attributable to the appellant's combination, the balance being attributable to the presence in the infringing device of elements not included in that combination, and as the appellant failed to make proof of how much of the total profits was due to the presence of its combination in the infringing device, there is nothing upon which more than a nominal recovery could be grounded.

"The conclusion reached is that the decree finding that the device Type M, without open spaces in the core, now manufactured by the appellee, does not infringe appellant's patent and that the appellant is entitled to nominal damages only on account of the infringing device, must be affirmed."

It is respectfully submitted that the decree of the Circuit Court of Appeals should be affirmed.

MELVILLE CHURCH,
Counsel for Respondent.

JANUARY 19, 1912.

FILED
FEB 27 1912
JAMES H. McKENNEY

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1911.

No. 179.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO., PETITIONER,

vs.

WAGNER ELECTRIC MANUFACTURING CO., RESPONDENT.

REPLY BRIEF FOR PETITIONER.

PAUL BAKEWELL,
THOMAS B. KERR,
Counsel for Petitioner.

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REPLY BRIEF FOR PETITIONER.

Sections XIII-XX, inclusive, pages 13-25, of Respondent's brief, are utterly immaterial to the present issue, since they relate wholly to the controversy about the Type M transformer and the construction of the patent with relation thereto. The questions of the scope of the invention and the construction of Claim 4, so far as the infringing converters are concerned, were settled in the Carbide Case. By the decree in that case the Respondent was estopped to urge, and the

Court of Appeals to hold, that the scope of the invention and the construction of the claim, were any other or different from those found and decreed by the Court of Appeals for the Second Circuit in the Carbide Case. In other words, that so far as the infringing converters were concerned, these questions were not open in the present suit, either to the Respondent or the courts below, whatever might be the case in regard to Type M, a question not now under discussion.

So far as the infringing converters are concerned, the decree was based on the bill and answer. That is to say, that the bill, after reciting the grant of the patent and the utility and recognition of the invention, plead the facts in regard to the Carbide suit, and averred that the matters and things found and decreed therein against the Carbide Company, were *res adjudicata* against Respondent (Rec., p. 5, Section VI).

On October 6, 1902, Respondent filed its answer admitting the grant of the patent, and the facts recited in the bill relating to the Carbide suit and the estoppel claimed thereunder (Rec., pp. 10-11, Sections VI to VIII); and also admitting that it had *"made, used and sold devices or apparatus which embodied the invention claimed in Claim 4 of said letters patent."*

On this state of facts, Petitioner was entitled, on the bill and answer alone, to the decree for an injunction and an accounting, which was awarded to it on February 16, 1904 (Rec., p. 271). All pro-

ceedings between the answer and the decree, except portion of stipulation (Rec., 14-15) relating to infringing transformers, related to the question of infringement as regards the Type M converter, and are wholly immaterial to the matter at bar.

Under section XXIV, pages 29-33 of Respondent's brief, the contention is made that Respondent had a right to make a comparison between the converter of Claim 4 of the patent in suit and one having open spaces between the coils and between the coils and core, but no open spaces in the core itself, on the ground that the use of the latter under the decision of the Court of Appeals was open to the defendant. The contention amounts to this: that merely because a device does not infringe a patent, a defendant in settling the question of profits has a right to compare the operation of the patented device and such non-infringing device in arriving at the value of the invention, regardless of whether the non-infringing device which is open to the use of the defendant was anterior or subsequent to the date of the invention of the patented device.

In support of this proposition Respondent's brief cites certain cases on pages 30-32, but it will be found upon examination that in all of these cases the comparison was with devices which were open to the public at the date of the invention in suit. The only case apparently supporting the Re-

spondent's position is that of Reed v. Lawrence, 29 F. R., 915. In the quotation from this case, on page 33 of Respondent's brief, the court says:

> "Of course it can make no difference in the rule whether the unpatented features were in use before or only since the patent was obtained. In either case the public are entitled to use them and the patentee, therefore, has no right to recover damages which include such use."

This statement is not in point. The patent in question was held to be a limited one and ruled by the case of Garretson v. Clark. The above remark follows directly after a quotation from that case on page 920 of 29 Fed., and is merely to the effect that the patentee cannot recover for associated features not covered by his patent. It is not inconsistent with the rule laid down by this Court, and which was most happily phrased at Circuit by Justice Harlan in Turrill v. Ill. Cent. R. Co., 20 F. R., 914. The last-named case was affirmed by this Court on appeal (110 U. S., 301). We have referred to this matter incidentally at the top of page 64 of our main brief, citing there, in addition to the above case, Crosby Valve Co. v. Safety Valve Co., 141 U. S., 441, 453.

The same rule is laid down in McCreary v. Penna. Canal Co., 145 U. S., 29, and also by the Court of Appeals for the Sixth Circuit in Canda Brothers v. Michigan Malleable Co., 152 F. R. 181-182.

Under the title "The Burden of Proof is on Complainant to Show Profit Due to Improvement Covered by Claim 4" Respondent's Brief, on pages 33-39, cites a large number of cases, in each of which the invention, however claimed, was of a limited character.

As to the rules governing the recovery of profits, Judge Sanborn, in his dissenting opinion (Rec., p. 597), said:

> "The decisions present two classes of cases, each governed by its own measure of profits, recoverable for an infringement. Where the patented device is a slight improvement upon an existing and operative machine, which accomplished the same result without as with the patented improvement, as in Garretson v. Clark, 111 U. S., 120, where the patented improvement was a slight change in the jaw of a well known and operative mop head; Keystone Mfg. Co. v. Adams, 151 U. S., 139, where the improvement patented was a revolving winged shaft attached to an old operative and successful corn sheller to facilitate the movement of the corn into the sheller; and in Seymour v. McCormick, 16 How., 480, where the improvement was a driver's seat upon an operative and successful harvesting machine, the profits from the sale or use of the entire machine, the entire mop head, the entire corn sheller, or the entire harvesting machine, may not be recovered by the patentee, but its recovery is limited to the profit derived from the patented improvement to the operative machine only."

All of the cases cited in Respondent's Brief, pages 33-39, above referred to, fall in this class. As to the other class, Judge Sanborn said:

> "But where the complainant's patent secures a new combination or a new machine, which accomplishes a result never obtained before it was invented, the entire profits derived from the infringing device are recoverable; for, since no combination or device existed before the invention by which the desired object could be attained, there is no combination or device but the inventor's to which the profits can be lawfully attributed."

In support of this proposition, Judge Sanborn cites Crosby Valve Co. v. Safety Valve Co., Elizabeth v. Pavement Co., and other cases cited in our main brief.

Within the rule laid down by this Court in these cases, Petitioner has established, in the case at bar, that the profits made by the Respondent on the infringing transformers were to be attributed to the employment of the entire invention covered by Claim 4 of the patent in suit.

It was found by the Court of Appeals in the Carbide case that by virtue of claim 4 Westinghouse was "entitled to claim the means by which the external and internal surfaces of the heat-producing parts of the converter were cooled, by such an ar-

rangement and separation of the parts as would permit the circulation about them of oil, and the means for the retention of said oil within and about said surfaces whereby the heat from the oil radiated to the surrounding air." (See our main brief, pages 15-16.)

It was also found in the Carbide case (see our main brief, page 16) that the practical result of the above stated invention "was to so increase the capacity of the converters that, while a dry converter, cooled by the natural circulation of air, is limited to ten kilowatts, the oil insulated converters of the patent in suit are commercially serviceable up to five hundred kilowatts."

As the master points out, this was an increase in the capacity of the transformer of five thousand per cent (Rec., 288).

By the answer (Rec., 11) Respondent admits that after the grant of the patent in suit and before the filing of the bill it had made, used and sold devices which embody the invention of claim 4 of the patent in suit. This is also stipulated at pages 14 and 15 of the record, where the Respondent admits, by reference to the illustration of the infringing transformer found at page 108 of the record, that it was

> "a transformer having parallel primary and secondary coils and a core composed of thin plates of soft iron arranged in groups, said groups being separated from each other by blocks, thus providing spaces between the

groups of plates; and the coils and core being enclosed in a metal case containing a non-conducting fluid which circulates through the open spaces of the laminated core."

It was in respect to such transformers as the one just described that the injunction and accounting (Rec., 269) were granted.

Each of the 6,524 infringing transformers accounted for was of the construction above set forth and illustrated at page 108 of record.

In accordance with the above facts, the master found in his seventh finding of fact (Rec., 286) that the entire commercial value of all the infringing transformers accounted for was due to the invention of claim 4.

It also appears from the testimony of Respondent's general manager and treasurer, Layman (see Q. 237, R., 487, and answer thereto foot page 488 of record), that the Respondent abandoned the old style of air-ventilated type of converter in 1894, seven years after the date of the patent in suit, and began to make the infringing transformer of the type accounted for and illustrated at page 108 of the record.

The above-recited facts and circumstances establish:

(1) The nature and value of the invention claimed by claim 4 of the patent in suit.

(2) That Respondent, beginning in 1894, recognized the value of this invention, so much so that between that date and 1901, when the Carbide suit was decided, it had made more than 6,524 of these infringing transformers.

(3) That within the decision of Garretson v. Clark, 111 U. S., 120, and of the other decisions of this Court cited above,

> "the proof in this case is satisfactory that the entire value of respondent's infringing transformers accounted for was properly and legally attributable to the invention of"

claim 4 of the Westinghouse patent in suit, to paraphrase the language of this Court in Hurlbut v. Schillinger, 130 U. S., 471, 472.

On pages 46-50 of Respondent's brief is an argument as to the value of the spaces between the coils and between the coils and the core in the infringing transformers, as compared with the value of transverse spaces in the core, and it is in effect contended that the former are more valuable than the latter, and that as claim 4 of the patent in suit is limited to the latter and the former is open to the public, Petitioner must apportion the profit between these two features. The premises upon which this argument is based, are that the respondent is not bound by the estoppel, and that the proceedings before the master are governed by

the decision of the Court of Appeals as to the construction of the patent with regard to the Type M converter, and not by the decision of the Court of Appeals in the Carbide case as to the infringing converter. We have already argued that so far as the infringing converters are concerned, they being identical with the converters involved in the Carbide case, the decision of the court in that case governs all proceedings having reference to them, including the accounting.

But the position of Respondent in this respect is inconsistent with that taken by it in connection with the testimony at final hearing, where it was seeking to establish non-infringement of Claim 4 by the Type M converter; it then took the position that the spaces between the coils and between the coils and core were detrimental. We refer to this in our main brief on page 45, to show that such spaces could not be claimed to be a source of profit, and therefore were not grounds for an apportionment. In fact, the case in this respect is similar to Elizabeth v. Pavement Co., 97 U. S., 141, where this Court said:

> "The evidence, if it shows anything, tends to prove that the addition diminished the profits instead of increasing them."

On page 39 of the record Respondent's witness, Nipher, referring to the illustration of the Type M transformer in Respondent's Catalogue No. 102 (Rec., p. 144), said:

"The open rectangular channels, which are an essential element in making this transformer core, are not wholly filled by the copper wires. The wire coils are separated from the iron core by spacing strips, and a considerable portion of the space usually occupied by the copper wire is not made use of for this purpose. There is also a space between the two groups of coils shown in this Wagner drawing. In other words a certain amount of the copper winding is left out in order to produce these channels between the coils and between the coils and the core. The primary coil is the element which receives the incoming energy from the line. The secondary coil has this energy transferred to it for delivery to the secondary circuit. *These coils are crippled in order to produce these ventilating or cooling channels. The effectiveness of these coils is diminished by reason of the fact that they are removed from the iron through which the inductive action is to take place. The open spaces in the core, referred to in Claim* 4, *do not produce this deleterious result.*"

This was regarded as a substantial and important difference by the circuit court, being strongly urged by the Respondent.

In his opinion on the contempt motion, Judge Amidon (Rec., p. 148) said:

"The defendant's device has no open spaces in its core; the cooling liquid does not circulate through any such spaces. On the contrary, the defendant has sacrificed

> efficiency in its device, and placed the spaces between the core and the coils through which the cooling liquid is supposed to circulate."

In his opinion at final hearing, Judge Adams (Rec., p. 566, foot), comparing the Defendant's device with the patent, says:

> "The other (the defendant's) has its spaces inside the core between its inner surface and the outer surface of the coils, thereby thus releasing the grasp of the core upon the coils and decreasing the efficiency of its transforming action,"

and on page 567, first paragraph,

> "Defendant's device is constructed at the expense of efficiency, which the Complainant's device avoids."

Thus it appears, that when it was to the interest of Respondent to claim that these longitudinal spaces were injurious, it did not hesitate to do so and to urge that view upon the court; while, when later it appeared to it to be to its interest to claim the contrary and defeat the accounting, it did not hesitate to take the opposite ground. We submit that it cannot be permitted to thus blow hot and blow cold in this way.

It is elementary that a party cannot take an inconsistent position on the record. Where one has deliberately taken a particular position in the course of litigation, he cannot subsequently, in the

same litigation, take an inconsistent position; one cannot play fast and loose. Bigelow on Estoppel, 5th edition, page 717; Railway Co. v. McCarty, 96 U. S., 258.

Clearly the Master was warranted in saying, as he does at the foot of page 281 of the record:

> "It seems to me entirely immaterial for this inquiry whether the infringing transformers had or had not spaces between the coils and between the coils and the core."

On page 50 of Respondent's brief reference is made to a patent of Thomson, dated March 20, 1894, and a patent of Moody, dated May 28, 1895, in support of the proposition that it is more important to keep the coils cool than the core, and counsel says that "for some unexplained reason copies of these patents have been omitted from the transcript."

These patents were offered before the master (Rec., p. 424) and were admitted by him, subject to objection as to competency. In his report the master sustained the objection (Rec., p. 290), and apparently they were not before the Court of Appeals, for no reference is made to them in the opinion, and they do not appear in the transcript of record which was certified by the clerk of that court, in connection with the petition to this Court for a writ of certiorari, as "identical with the printed record upon which said cause was heard and decided in said Circuit Court of Appeals."

(Rec., p. 577.) The certificate as to the record entries, proceedings, etc., is on page 657.

Moreover, after the petition was granted, Respondent's then counsel (Mr. Fowler) stipulated that the transcript filed with the petition should be taken as a return to the writ of certiorari, and requested the clerk of the Court of Appeals to send up a copy of the stipulation as his return to said writ (Rec., p. 658), which the clerk did on January 27, 1910 (Rec., 659).

Respondent made no motion for certiorari for diminution of record under Rule 14, as required in such cases.

It will be observed from the recital of the Thomson and Moody patents in Respondent's brief, that they were granted to strangers to this record, respectively seven and eight years after the date of the patent in suit, and they are therefore clearly incompetent. Moreover, their production would not prove the truth of their statements.

The Prior Art.

Under the above heading, section XXXI, p. 53, Respondent's brief states that:

> "The prior art shows that the transformer disclosed in Defendant's catalogue (p. 144) is old and cannot, therefore, for this reason also, be held to be covered by the patent here in suit."

The above statement is an error. The transformer illustrated at page 144 of the Record is the Respondent's Type M transformer, found in its Bulletin No. 43 of 1901 (Rec., p. 135). Respondent's witness Laymay says (Rec., p. 72) that that transformer was first made in 1901; at page 312, referring to the same transformer, the same witness says that it was first made in September, 1901. This is the same transformer referred to in the master's report (Rec., foot of page 277) as having been devised by the Respondent about the time of the decision in Carbide case, which was in 1901. It is the same transformer referred to in the opinion of Judge Amidon (Rec., 147), and in the opinion of Judge Adams (Rec., 568) as having been first made by Respondent after the decree in the Carbide case. Likewise, the Court of Appeals (Rec., 584) refers to this Type M transformer as one manufactured by Respondent *since* the decision in the Carbide case. The prior art does not show that the transformer illustrated at page 144 of the record was a device existing prior to the patent in suit.

As to the prior art patents referred to between pages 54 and 55 of Respondent's brief, we have this to say:

(*a*) The patents there considered are patents which were considered by the Court of Appeals in the Carbide case (*inter alia*, see pp. 14 and 15 of our main brief).

(*b*) Not one of those prior patents discloses the combination claimed by Claim 4 of the patent in suit.

(*c*) Those prior patents were not introduced into this record to affect the question of the validity or the scope of the patent in suit, so far as the infringing transformers accounted for are concerned; indeed, Respondent was estopped from introducing into this case any patents of the prior art for any such purpose. Those prior patents were introduced into the record in this case by the Respondent as affecting the scope of Claim 4, so far as Type M transformer (not in issue now) was concerned.

As to the proposition discussed at page 52 of Respondent's brief, our reply is that this Respondent is estopped and concluded on this record, as much before this Court as before any other court, by the things found and decreed in the Carbide Case, under well-settled principles of law and under the decisions of this Court cited at pages 33 and 34 of our main brief, notably the cases of Cromwell v. The County of Sac., 94 U. S., 371, and Lander v. Mercantile Bank, 186 U. S., 476.

Conclusion.

For the rest, so far as Respondent's brief is addressed to any issue now before this Court, we believe and submit that it is fully met and answered by our main brief in this case.

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WASHINGTON, D. C., February 27, 1912.